SHAPE MECHANIC
PROOF OF PURCHASE

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411 NORTH BRIDGE ROAD #04-00
PENINSULA PLAZA, SINGAPORE 0617
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† Supports DOS 3.3 only
‡ Supports ProDOS™ only
* Supports DOS 3.3 *and* ProDOS™

(Subject to change—See our current ads or catalog.)

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COMPATIBLE

Any version of Apple II* DOS 3.3 *and* ProDOS™

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EST. 1980
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Shape Mechanic

HI-RES SHAPE/ANIMATION DISK
by BERT KERSEY and MARK SIMONSEN

ANIMATE YOUR PROGRAMS!
Shape Mechanic is our new *high-speed* "shape table" disk that lets you design and create your own professional looking hi-res animation and screen displays.

Using the keyboard, draw shapes on the hi-res screen and let your Apple convert them into shape tables. Shapes are then easily manipulated by Apple's built-in *Draw* and *Xdraw* commands, or the programs on the disk.

30 HI-RES TYPEFACES
30 editable hi-res fonts are on the disk, ready to be used in your graphic presentations. Any character may be redrawn to become any graphic symbol.

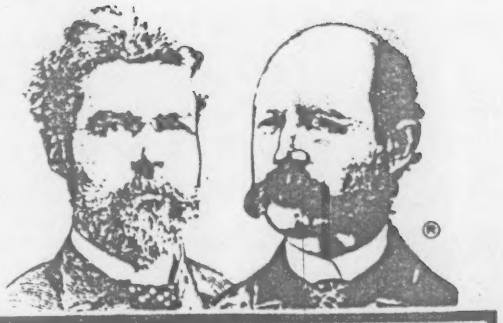
Type directly onto charts, graphs and hi-res pictures using the type styles, sizes and colors that you want. Our proportionally-spaced type is positionable anywhere on either hi-res screen—no vtab/htab restrictions.

HI-RES SHAPE CAPTURER
Shape Mechanic's *Shape Capture* program lets you take a hi-res picture from any unprotected source and convert all or part of it into a shape table.

BONUS PROGRAMS
Shape Mechanic is packed with useful programs—Besides the hi-res shape editor, font editor, shape capturer and hi-res typing programs, you'll find Listable music and sound tricks, fancy screen wipes, and Listable demo programs that teach you how to program with hi-res graphics using normal Applesoft commands.

NO FEE REQUIRED
Shape Mechanic's routines and fonts are usable, without licensing fee, in programs that you sell. Just credit Beagle Bros on your disk and manual.

FREE PEEKS & POKES CHART
Apple's "Peeks, Pokes, Pointers and Calls" on one 11×17 poster. An indispensable Apple programming tool.



SHAPE MECHANIC

SHAPE EDITOR/HI-RES FONT DISK

by Bert Kersey & Mark Simonsen

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San Diego, California 92110

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Introduction

Welcome to Shape Mechanic! This is a disk for programmers who want to spice up their Apple hi-res screens and become better programmers. We assume you already know the basics about Applesoft programming; loading and saving files, running programs and so on. Beyond that, we'll do our best not to leave out any details.

ABOUT THE DISKS

First of all, the Shape Mechanic disks are stuffed on both sides, so any saving of pictures, programs or shape tables will have to be done on your own disks, formatted in the appropriate DOS.

Transfering files from disk to disk can be done with Apple's *Filer* program (ProDOS), or *Fid* (DOS 3.3), or the *System Utilities* disk, or whatever program came with your Apple. Apple's manuals tell you how to use these programs.

ProDOS AND DOS 3.3

Two sets of programs are included in your Shape Mechanic package on two double-sided disks: a *ProDOS* version on one disk and a *DOS 3.3* version on the other. Both versions work nearly identically. The one you use is up to you; it depends on which DOS (Disk Operating System) you like to use.

You will probably always want to use the same version of Shape Mechanic, so hide the other one in the closet now and you won't get confused.

In a way, it doesn't matter which version you use, because all pictures, shape tables and fonts saved on disk may be converted from DOS 3.3 to ProDOS and back using ProDOS's *Convert* program or the IIe *System Utilities* Disk. Please don't convert the Shape Mechanic programs, though.

TRIPLE YOUR SPEED WITH PRONTO!

If you are using DOS 3.3 Shape Mechanic, we highly recommend updating it with our *ProntoDOS* utility to triple the speed of loading and saving files. (For example, hi-res pictures load onto the screen in 3 seconds instead of 10!)

THE BOOT-UP MENU

Boot either Shape Mechanic disk label-side up (the backs won't boot) to use the files on either side. Most of the programs may be selected from the menu on the screen after you boot. You may get the boot-up menu back later by typing "RUN STARTUP".

You may also use the Shape Mechanic disks without booting if you first boot any standard unprotected disk like the *ProDOS User's Disk*, the DOS 3.3 *System Master*, a ProntoDOS disk, or whatever "system" disk came with your Apple.

For you newcomers out there, "boot" means insert your disk in Drive 1, close the door and turn your Apple on. Or with the power on, press Control-Apple-Reset, or type "PR#6".

PROGRAM WON'T WORK? TRY FP!

If a program gives you a strange problem like an ?Out of Memory Error, try typing "FP" (a command under DOS 3.3) or "-FP" (to run our ProDOS "FP" program). Then re-Run the program in question. If that doesn't work, go ahead and re-boot. Oh, "FP" stands for "Floating Point". (Don't ask why.)

BACK IT UP

Unlike most commercially available disks, Shape Mechanic is not copy protected (just copy*righted*). You can (and should) make backups with the standard copy program that came with your Apple. Be sure and store your backups in a safe place, away from magnetic fields (and little kids!).

And THANKS for not giving copies of our disks away to your friends; we appreciate it. You support us and we'll support you.

PRINTING ON YOUR PRINTER

To print Shape Mechanic images, or hi-res graphics from any source, on your printer, you must have (1) a graphics-capable printer, and (2) a printer dump program like Beagle Bros' *Triple-Dump*, or a special printer interface card.

The Shape Mechanic Catalog

After booting one of the Shape Mechanic disks, you can type "CAT" (if you're using ProDOS) or "CATALOG" (under DOS 3.3) to see the files on your disks. Here's an alphabetical list:

SIDE 1: PROGRAMS AND DEMOS

BASIC.SYSTEM (ProDOS disk only): The file that makes PRODOS work together with Applesoft.

BEAGLE.NEWS: A little bit of advertising.

CURSORS: A shape table used by many of the programs on the disk.

DEMO.SHAPES: The shape table used in the SHAPETABLE.DEMO program.

F.APPLE, F.BLOCK, etc.: Files that start with "F." are shape-fonts. The fonts on side 1 are used by the demos. They are repeated on side 2. See pages 58-67.

FONT.EDITOR: This program lets you edit and create hi-res shape-fonts. (FONT.EDITOR.ML is an accompanying file.)

FP (ProDOS disk only): A program to clear memory and reset pointers.

GREETINGS: Our "talking heads" say hello, using the features of Shape Mechanic (and then some).

HI.WRITER: This program allows program-control of shape-fonts. You add your own Applesoft commands to make "live" graphic presentations.

HI.WRITER.DEMO: Run and List this program to see how HI.WRITER works.

NOTES: Run this program for the latest news on updates or corrections to this manual.

PIC.BBROS.LOGO, etc.: "PIC." files are hi-res pictures used by the demo programs.

PRODOS (ProDOS disk only): Apple's ProDOS operating system. Loads when you boot.

SHAPE.EDITOR: A program that allows you to create and edit shape tables to use in your programs. (SHAPE.EDITOR.ML is an accompanying file.)

SHAPE.CAPTURE: This program lets you to make a shape table out of part of a hi-res picture. (SHAPE.CAPTUR.ML is an accompanying file.)

SHAPE.APPEND: This program lets you combine two or more shape tables into a larger shape table. (SHAPE.APPEND.ML is an accompanying file.)

SHAPETABLE.DEMO: This is a demo of general shape table commands and loading procedures.

SONG.SUBROUTINE: A few little tunes and noises to liven up your programs. Run and List to learn.

STARTUP: This program runs when you boot side 1 of either Shape Mechanic disk.

TEXT.TRICKS: Some Applesoft text screen wipes and tricks. Run and List to learn.

XTYPER: This program lets you type shape-font characters directly onto the hi-res screen. (XTYPER.ML is an accompanying file.)

SIDE 2: SHAPE-FONTS

F.ACE, F.APPLE, etc.: All of Shape Mechanic's fonts appear on the back of the disk.

Creating Shape Tables

WHAT'S A SHAPE TABLE?
Shape tables are Apple graphics tools that let you use Applesoft commands to draw and manipulate small shapes (drawings) on the hi-res screen. Each "table" is simply a series of 1 to 255 shapes stored in your Apple's memory in the form of a table of numbers.

Shape Mechanic takes care of the numbers. All you need to know is how to create the shapes (we're about to show you) and how to get them on the screen (see pages 19, 32 and 43).

The Shape Mechanic disk has three programs that make creating shape tables a snap:

1. SHAPE.EDITOR (page 8)
For general use: This program lets you draw shapes and store up to 255 of them on disk as a shape table. Each shape can be up to 48 x 63 pixels (dots) in size.

2. SHAPE.CAPTURE (page 15)
For general use: This program lets you create shape table shapes out of parts of your existing hi-res screens. The size limitation varies according to the complexity of your picture.

3. FONT.EDITOR (page 52)
For creating shape-font characters: This program lets you make or change hi-res characters that can be utilized by the XTYPER and HI.WRITER programs (included on the Shape Mechanic disk).

Shape Table Program Common Options

The Shape Editor, Shape Capture, Shape Append, Font Editor and Xtyper programs all use these options:

D: DRIVE (DOS 3.3 only)
Press "D" to change the slot (1-7) and drive (1-2) that will be used when you Load, Save and Catalog. (Drives are almost always in slot 6.)
If you don't want to change the drive after all, press Return or Esc.

P: PREFIX (ProDOS only)
Press "P" to change the "prefix" that will be loaded from, saved to or cataloged by the commands listed below. Then type the prefix's name and press Return. A prefix is a directory name, often a disk's name starting with a slash (like "/DISK").
If you don't know the name of a new disk, type ",D1" or ",D2" (your drive number).

L: LOAD
Press "L" to load a file from disk: a shape table, hi-res picture or shape-font. Then type the name of the file and press Return. Catalog with option "C" (below) if you can't remember a name. If you don't want to load a file after all, press Return without typing a name.

S: SAVE
Press "S" to save a shape table, picture or font on disk. Then type the name you want it to have on the disk. We recommend you use picture names that begin with "PIC." and font names that begin with "F.". If you don't want to save a file after all, press Return without typing a name.

C: CATALOG THE DISK
Press "C" to catalog the disk to see what's there. In ProDOS, you may need to use Control-S to pause extra-long catalogs. At the end of the catalog, press any key to return to the menu.

Q: QUIT
Press "Q" to quit the program, leaving the hi-res screen visible (usually). If you change your mind, type "RUN", and the program should start again.

SHAPE.EDITOR

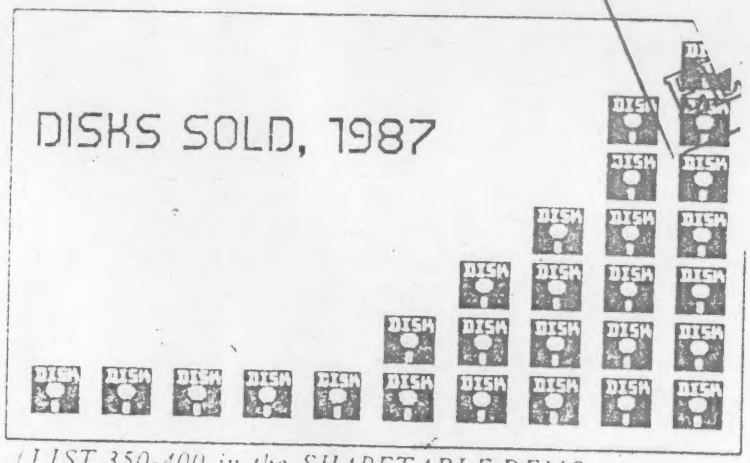
The SHAPE.EDITOR program lets you draw hi-res shapes by plotting them on the screen from the keyboard. When finished, you can save the drawings to disk in the form of a shape table for use in your Applesoft programs.

THREE FILES REQUIRED
When you first start out, the following three files must be on the same disk:
1. SHAPE.EDITOR: An Applesoft (A or BAS) file
2. SHAPE.EDITOR.ML: A Binary (B or BIN) file
3. CURSORS: Another Binary (B or BIN) file
See "About the Disks" on page 2 for information about transfering files from disk to disk.

To use SHAPE.EDITOR, select it from the boot-up menu, or type "RUN SHAPE.EDITOR".

MAIN MENU
The first thing you see will be the hi-res screen with the main menu below, offering the options on the following pages. You can usually "escape" to this part of the program by pressing the Esc key.

When the program title is visible at the top of the screen, you will see two dots (if you're just starting), or two copies of the last shape you viewed or edited.



(LIST 350-400 in the SHAPETABLE.DEMO program.)

SHAPE.EDITOR Options

The options on this page are available when the Shape Editor's main menu is on the screen.
See Prefix, Drive, Catalog and Quit on page 7.

E: EDIT
See next page.

V: VIEW SHAPES
Press "V" to view each shape in the current shape table individually, both "Drawn" and "Xdrawn" (these often look the same). Use the left and right Arrow keys to view different shapes. Press Return when finished.

L: LOAD
(Details on page 7) As a test, load a set of shapes. Press "L", then type "DEMO.SHAPES" (Return). Another interesting one is "CURSORS". You can add more shapes to any shape table or replace any of the shapes with any drawing you want to create. (If you do change one of the two shape tables suggested here, save it under a new name!)

S: SAVE
(Details on page 7) Press "S" to save your edited shape table on disk.

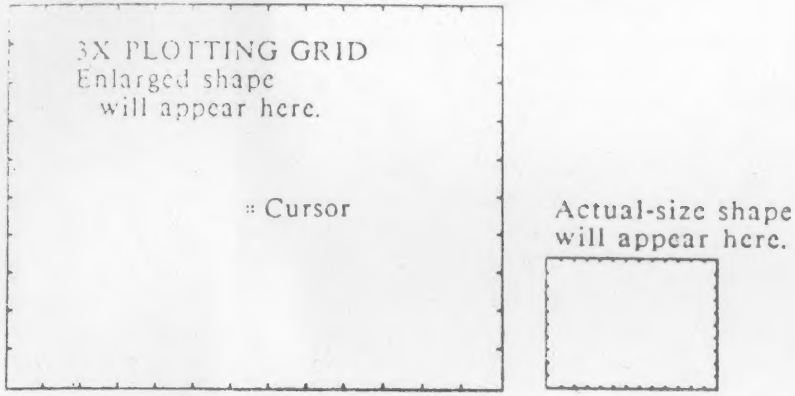
N: REMOVE NOTES
With the main menu on the screen, you can temporarily remove or replace the four lines of text at the bottom by pressing "N".

SIZE LIMITATIONS
The Shape Editor limits shapes to the size of the plotting grid, 48 x 63 hi-res plots, or a maximum of 8192 separate vectors (a lot). If you want to make a shape larger or more complex than this, you will have to take a drawing from another source (like a drawing program) and use the Shape Capture program (page 15).

E: EDIT A SHAPE
When you edit a shape, you will actually be re-drawing an existing shape (maybe just a dot) on the screen. After pressing "E", you will see a shape on the screen both Drawn and Xdrawn with its shape number below. If you haven't loaded anything, you will probably just see two dots.

SELECTING THE SHAPE TO EDIT
To advance to the next or previous shape, press the right or left Arrow key. Shape #1 will follow the last shape and vice versa. You can always advance one higher that the last shape in a shape table. For example, there are 12 shapes in DEMO.SHAPES, and you can select from #1 through #13. This way you can add new shapes to an existing table.

With the shape or shape number that you want to redraw on the screeen, press Return. Now you see two boxes on the screen and a flashing cursor.



You will be creating a shape in a magnified version (3 times actual size) by plotting inside the larger rectangle. Simultaneously, you will see the shape in actual size in the smaller rectangle.

(Turn the page for **PRE-PLOT and IMPRINT.**)

ARROWS: PICK A STARTING POINT
To allow room for your drawing in the box, move the cursor, if necessary, to your shape's starting point and press **Return**. Move the cursor with the four Arrow keys. Use A & Z if your Apple has no up and down Arrow keys. Now you can draw!

ARROWS & SPACE BAR: DRAW
Use the Arrow keys (and A & Z) and make a picture on the screen. Press the Space Bar to switch between plot & move and no-plot & move. A solid flashing cursor means that the next vector (dot) will plot (draw) when you move. A dotted flashing cursor means the next vector will not plot, only move. The words "Plot Direction" on the screen change to "Move Direction" and back.

Your drawing will consist of a number of "vectors" (visible or invisible lines, one-plot long). All vectors, whether they plot or not, move in one of the four directions. To draw a diagonal line, you must "stair-step", alternating between plot and no-plot.

When you reach 8192 vectors (highly unlikely), you will be asked if you want to write the shape into the shape table. If you answer "No" and continue editing, you will have to back up (by pressing "X") before you can add more vectors.

X: BACK UP AND ERASE
To erase parts of shapes as they are being drawn, use "X" as a "backspace" key. You cannot erase pre-plot dots (next page) with "X".

RETURN: FINISH A SHAPE
Press Return to quit drawing. When asked, "Write Shape into Table?", press "N" if you want to keep on drawing. To start over, press "N" and then Esc.

If you answer "Y", your drawing will be "written" into the shape table. The main title will reappear when writing is complete. Create as many shapes as you like, from 1 to 255. Just press "E" and select the shape you want to redraw next.

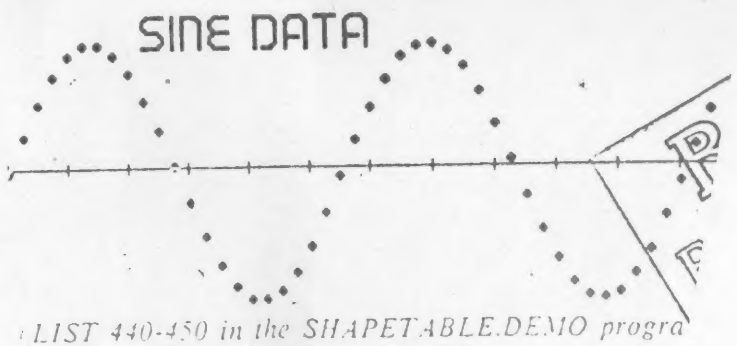
P: PRE-PLOT
"Pre-plotting" is used so you can sketch on the screen without worrying about how many vectors you're using (see "Efficiency Note" below).

1. From the main menu, press "E" to edit a shape. Use the Arrow keys to find the shape, and press Return.

2. Press "P" to pre-plot a shape for tracing.

3. Use the Arrow keys (and A & Z) to draw on the screen with a series of dots. The actual-size drawing in the smaller rectangle will appear as it normally would. To erase a dot, you need to plot on top of it. You may leave extra dots on the screen; they will have no effect on your final drawing.
   When finished pre-plotting, press Return. The actual-size sketch will disappear but the 3X version will remain. Now you can trace the dots to create your shape.

EFFICIENCY NOTE
While it's best to use the fewest number of vectors possible, don't give it too much thought. An "inefficiently" drawn shape will take up some extra memory all right and take your Apple maybe a micro-second longer to draw. You can probably afford both.



LIST 440-450 in the SHAPETABLE.DEMO progra

I: IMPRINT
"Imprinting" is used when you want to create a shape similar to another (for animation, perhaps) by tracing over that shape's imprint.

1. From the main menu, press "E" to edit a shape. Use the Arrow keys to find the shape, and press Return.

2. Press "I" to imprint a shape (from the current shape table) on the screen for tracing.

3. Use the left and right Arrow keys to select the shape you want to imprint.

4. Press Return to imprint it on the screen.

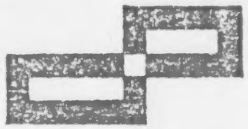
5. Reposition the shape using the Arrow keys. Repositioning is done to center the imprint in the rectangles or to align the imprint with your pre-plot drawing.

6. Press Return to keep the imprint on the screen and start or continue plotting your shape. Or, to erase the imprint, press Esc. The imprint will be erased from the small (actual size) rectangle, regardless of what you do.

The imprint in the larger rectangle is Xdrawn at three times normal size. If the drawing you are creating is already in progress on the screen, the dots in the imprint will be temporarily invisible where they cross your pre-plot picture.

PLOTTING TIPS

- **Lines that cross** can be confusing at first. A plotting vector (solid cursor) will normally plot. But a vector that plots over an already-plotted point (as in the center of a figure-8) will unplot the point.



2 PLOTS = NO PLOT

You may ignore this problem if you are going to mainly DRAW your shapes from your programs, but if you are going to XDRAW or animate them, the flaw will show. To move the plotting cursor without changing the drawing under it, use the Space Bar to select the dotted (non-plotting) cursor. And remember, you can always correct mistakes by backing up with the "X" key.

- **Positioning the cursor before plotting** is usually necessary only on large shapes that might approach the limits of the drawing rectangle. If you are planning a shape that is going to go off to the right, for example, you should position the cursor near the left edge of the rectangle before plotting, giving you room to draw.

- **The last point of a shape** is where the next shape will start. For example, if a program uses a command like "DRAW 1: DRAW 2", shape #2 will be drawn on the screen starting where Shape #1 ended. If you will always be using plotting coordinates in your programs, like this:
DRAW 1 AT 10,10: DRAW 2 AT 10,99
you don't need to be concerned about where any of your shapes end.

SHAPE.CAPTURE

The SHAPE.CAPTURE program lets you turn parts of existing hi-res pictures into shape table shapes.

TWO FILES REQUIRED
When you first start out, the following two files must be on the same disk:
1. SHAPE.CAPTURE: An Applesoft (A or BAS) file
2. SHAPE.CAPTUR.ML: A Binary (B or BIN) file
See "About the Disks" on page 2 for information about transfering files from disk to disk.

To use SHAPE.CAPTURE, select it from the boot-up menu, or type "RUN SHAPE.CAPTURE".

MAIN MENU
You will then see the current hi-res screen, with the menu below, offering the options on the following pages. You can usually "escape" to this part of the program by pressing the Esc key.

The hi-res screen will display whatever was already there. It may be a picture that you loaded or even a screen from the Shape Editor, Font Editor, or whatever. You will also notice a number in the lower left corner of the screen (usually a zero when you first start up). This lets you know how many shapes you have captured so far.

SIZE LIMITATIONS
1. The Shape Capture program limits the size of a shape to a maximum of 8192 separate vectors. If you surpass this limit, you will get an error message "Too Large...Try a Smaller Window.". The actual size that 8192 vectors will include depends on the complexity of your picture.
   There would be no point in creating a shape table larger than 8192 vectors; Bloading the entire screen from disk would be more efficient.
2. If you create a shape that is larger that 48 dots high and 63 dots wide, you won't be able to edit the shape later with the Shape Editor.

SHAPE.CAPTURE Options

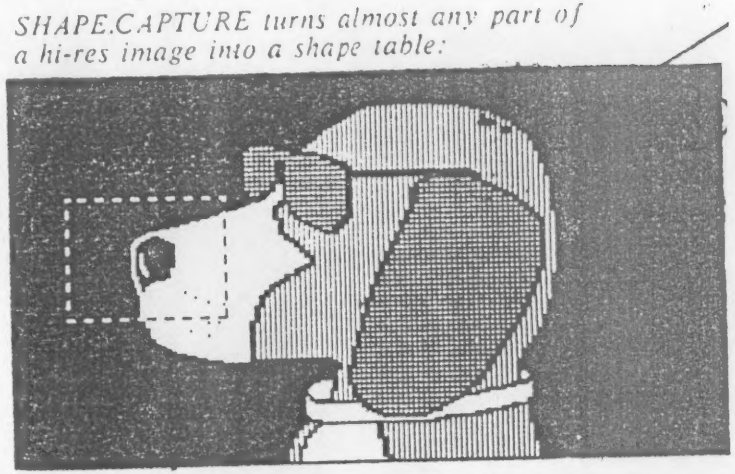
The options on this page are available when the Shape Capture program's main menu is on the screen. See Prefix, Drive, Catalog and Quit on page 7.

O: OUTLINE
This is the main "Capture" option. See next page.

L: LOAD
(Details on page 7) As a test, load a hi-res picture. Press "L" and type "PIC.BBROS.LOGO" (Return). Try capturing some test shapes out of this picture.

S: SAVE
(Details on page 7) Press "S" to save your captured shape(s) on disk.

SHAPE.CAPTURE turns almost any part of a hi-res image into a shape table:



O: OUTLINE AN AREA
Press "O" to outline part of the hi-res screen for capturing. You will then see an outline-box in the upper left corner of the screen.

ARROWS: MOVE THE BOX
Move the box one dot at a time with the four arrow keys. If your Apple doesn't have up and down arrow keys, use A & Z.

To move more quickly (10 dots at a time), use Control-A and Control-Z for up and down and the "<" and ">" keys for left and right.

To get back to the main menu without capturing a shape, press Esc.

CHANGING THE SIZE OF THE BOX
To move only the upper-left or lower-right corner of the box, press "1" or "2". Now use the Arrow keys (and A & Z) to change the box's size. Press "3" to continue moving the entire box.

The starting size of the box is 48 dots high and 63 dots wide. This is the same as the maximum size allowed by the Shape Editor program.

RETURN WHEN FINISHED
Once you have outlined the part of the screen to be captured, press Return. It will be converted into a shape table in memory and you will be returned to the main menu. You will notice the number of shapes captured so far (in the lower left corner of the screen) has been increased by one.

TO START OVER
If, after creating some shapes (and maybe saving them on disk), you want to start a new shape table, just type "Q" from the main menu and then type "RUN" (Return). This will restart the program and zero out the shape table in memory.

SHAPE.APPEND

SHAPE.APPEND lets you combine two or more shape tables into a single shape table.

TWO FILES REQUIRED
When you first start out, the following two files must be on the same disk:
1. **SHAPE.APPEND:** An Applesoft (A or BAS) file
2. **SHAPE.APPEND.ML:** A Binary (B or BIN) file

See "About the Disks" on page 2 for information about transfering files from disk to disk.

To use SHAPE.APPEND, select it from the boot-up menu, or type "RUN SHAPE.APPEND".

HOW TO APPEND SHAPES
(See other options on page 7.)

1. Press "L", then type the name of the first shape table you want loaded from disk. The shape table's name and the number of shapes in it will appear under "Last Shape Table Loaded". The total number of shapes so far will appear under "Master Shape Table".

2. Press "A", then type in the name of a second shape table. This shape table will be appended onto the end of the shape table in step 1. The number of shapes in "Master Shape Table" and the name under "Last Shape Table Loaded" will be updated.

3. Repeat step 2 until you want to save the appended shape table. Then press "S" and save it (see page 7).

APPEND LIMITATIONS
You cannot create a new shape table that has more that 255 shapes or is larger than 16,384 bytes.

Drawing Shapes with Applesoft

This section covers the basics of using shape tables. The commands are simple and the results are amazing! Run and List the SHAPETABLE.DEMO program to learn much, much more. And above all, experiment! Get in there and make some mistakes (we can't teach you everything).

AN EXAMPLE PROGRAM TO GET YOU STARTED
1. Type "NEW" (Return).
2. Type in this program:

```
10 SH=25000
20 PRINT CHR$(4);"BLOAD DEMO.SHAPES,A";SH
30 POKE 232,SH-INT(SH/256)*256
40 POKE 233,INT(SH/256)
50 X=50: Y=50
60 HGR
70 HCOLOR=3
80 ROT=0
90 SCALE=1
100 DRAW 5 AT X,Y
```

3. Put the Shape Mechanic disk in drive 1. It has a file on it that the program will be loading.
4. Type "RUN" (Return). You should see an arrow on the screen. Well, do you?

   If you get a "File (or Path) Not Found" error, type "PREFIX /" and "CAT,D1" (ProDOS) or "CATALOG,D1" (DOS 3.3) to make sure that the file DEMO.SHAPES is on the disk in drive 1. Then type "RUN" again.

Now have some fun. Experiment by changing the values in lines 50-100 and re-Running the program. You can type "RUN 50" so you don't have to wait for the shape table to load every time. Or add a temporary line 5 that looks like this:

```
5  GOTO 50
```

(continued)

Here's another copy of your arrow drawing program with an explanation of each program line:

```
10 SH=25000
20 PRINT CHR$(4);"BLOAD DEMO.SHAPES,A";SH
30 POKE 232,SH-INT(SH/256)*256
40 POKE 233,INT(SH/256)
50 X=50: Y=50
60 HGR
70 HCOLOR=3
80 ROT=0
90 SCALE=1
100 DRAW 5 AT X,Y
```

LINE 10: PICK A LOCATION
Line 10 tells the shape table where to load in memory. We often use location 25000; it's a nice round number and usually out of the way of other goings-on. Other common locations are 16384 ($4000) and 24576 ($6000). (If you don't know what those "$" numbers are, just ignore them.)

LINE 20: LOAD THE SHAPE TABLE
Line 20 loads the shape table from disk. Shape tables are Binary files (file-type "B" or "BIN"), and you must always BLOAD (but never BRUN) them. To play it safe, always tell the shape table where to load by specifying the location as part of the BLOAD command (by using an ",A" followed by the location). In the example, we could have used this command for the same results:

```
20 PRINT CHR$(4);"BLOAD DEMO.SHAPES,A25000"
```

On page 68, there is a discussion regarding "More Room for Hi-Res Programs". If you load your Applesoft program, as suggested there, at location 24576 ($6000), you will need to load your shape table elsewhere or it will erase your program! Location 2048 ($800), the normal program location, would be appropriate and allow you the most space. If you like round numbers, set SH equal to 3000 in line 10.

LINES 30 & 40: SET THE POINTER
The two "Pokes" in lines 30 and 40 tell your Apple where you loaded your shape table, by setting a "pointer" that points to it. (If you don't understand, don't worry, your Apple does.)

If you forget to do the two pokes in a shape table program, the program might work fine anyway, because the pointer stays set from previous programs, even surviving the often-fatal NEW and FP commands. But always do the Pokes, or later, after you've turned your Apple off or re-booted, the pointer will point to the wrong place. The DRAW command will probably produce random scribblings, much as if you hadn't even loaded your shape table.

LINE 50: DRAWING COORDINATES
Line 50 sets X and Y, the locations used later in line 90, specifying where DRAW will start drawing. See more about coordinates on page 22.

LINE 60: CLEAR THE SCREEN
Line 60 reveals the graphics screen and clears it to black, leaving you with four lines of text at the bottom. Also see HGR2 on page 22.

LINE 70: SET THE COLOR
See page 22 or the back of your Peeks & Pokes Chart for a list of Apple's hi-res colors.

LINE 80: SET THE ROTATION
If you want the shape rotated 90-degrees, try ROT=16. More Rot on page 25.

LINE 90: SET THE SCALE
For a blown-up arrow, try SCALE=2. More on page 25.

LINE 100: DRAW IT!
Line 100 draws the shape table's shape #5 on the screen. "DRAW 6" would draw the next shape. For this particular shape table, anything above 12 will crash with an ?Illegal Quantity Error. No shape table can have more than 255 shapes.

Hi-Res: A Summary

Here is a brief rundown of the basics of hi-res. This is a monstrous subject, but we'll be brief. You'll learn more by typing in little programs and running them (whether they work or not) than anything else.

HI-RES COORDINATES

Apple's hi-res (high-resolution) screen is 280 "pixels" (dots) wide and 192 high. In typical computer fashion, all numbering starts at zero. Horizontal coordinates are 0-279 (left to right) and vertical coordinates are 0-191 (top to bottom).

A hi-res reference grid is printed on the back of the command card that came with Shape Mechanic.

HI-RES PAGES

You can store two hi-res pictures in memory at once, with each picture on a different "page" of memory. You can look at or draw on either page, or you can look at or type on the text screen. You can't draw on the text screen, but certain programs let you type on the hi-res screen.

HGR and HGR2

The HGR command does three things to hi-res page 1:

1. It reveals it so you can see it.
2. It erases it to black right before your eyes.
3. It makes page 1 the drawing page. (This means that commands like DRAW and HPLOT will now plot on page 1 instead of page 2.)

The HGR2 command does the same for Apple's second drawing page, "page 2".

HCOLOR

To draw on the screen, you need to specify a color by setting HCOLOR equal to a number, 0-7. If you don't, your picture might be the same color as the background (as in black-on-black) and you won't see it. Here are Apple's hi-res colors. Better yet, look at the back of your Peeks & Pokes Chart.

0=Black1, 1=Green, 2=Violet, 3=White1,
4=Black2, 5=Orange, 6=Blue, 7=White2

The two whites and the two blacks look the same to humans, but not to Apples.

These three commands clear the screen in green (HCOLOR=1). Try other colors:

```
10 HCOLOR=1: HPLOT 0,0: CALL 62454.
```

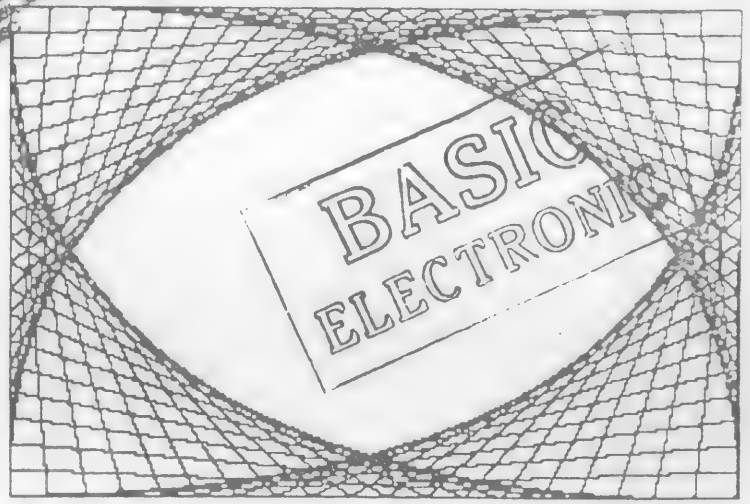
HPLOT

Type "NEW". Then type this program in. Then type "RUN". Then you might understand HPLOT:

```
10 HGR: HCOLOR=3
20 HPLOT 90,90: REM PLOT A DOT
30 HPLOT 5,5 TO 20,20: REM A LINE
40 HPLOT 0,0 TO 279,0 TO 279,150
   TO 0,150 TO 0,0: REM A BOX
45 HCOLOR=1: REM CHANGE TO GREEN
50 FOR Y=0 TO 50: HPLOT 200,Y TO
   270,Y: NEXT: REM SOLID BOX
```

MORE TRICKS WITH HPLOT

```
10 HGR2: HCOLOR=3: Q=280/192
20 FOR Y=0 TO 191 STEP 10
30 HPLOT 0,Y TO 279-Q*Y,0 TO 279,191-Y
   TO Q*Y,191 TO 0,Y: NEXT
```




```
10 HGR: HOME: HCOLOR=3: VTAB 22
20 PRINT "APPLE PRESCRIPTION WRITER"
30 FOR S=0 TO 3: HPLOT 0,S*40
40 FOR X=8 TO 250: IF NOT INT(RND(1)*33)
   THEN X=X+12: HPLOT X,S*40
50 X=ABS(X+(RND(1)*16)-6)
60 HPLOT TO X,RND(1)*33+40*S: NEXT X,S
```

Shape Table Commands

DRAW
Draw means just that, draw a shape from a shape table. Use the command like this:

```
100 DRAW 3 AT 100,90
```

The first number after DRAW is the number, 1-255, of the shape to be drawn. The next two numbers are the horizontal and vertical hi-res coordinates of the starting point of the shape. If a DRAW statement gives you an ?Illegal Quantity Error message, it means:
- You attempted to draw off the screen, or...
- You specified a shape number larger than the number of shapes available, or...
- You didn't load a shape table, or...
- You didn't set the pointer correctly (page 21).

XDRAW
This command works like DRAW, but ignores HCOLOR and plots each dot of your shape in the "opposite" color of the dot being plotted over. XDRAW is handy for animation because you can make a shape travel over and be seen against multi-colored backgrounds. You can also erase a previously plotted shape without having to use HCOLOR commands.
BLACK (0 or 4) is opposite WHITE1 (3 or 7)
GREEN (1) is opposite VIOLET (2)
ORANGE (5) is opposite BLUE (6)

DRAWING WITHOUT COORDINATES
After your first shape is drawn, you don't have to specify coordinates for the next DRAW or XDRAW, but you usually should. For example, try changing line 100 of page 20's sample program:

```
100 XDRAW 5: GOTO 100
```

Each shape drawn without coordinates will begin at the point where the previous shape ended.

SCALE
You can enlarge a shape by setting SCALE equal to a number, 2-255 or zero (zero is equivalent to 256). Scaled-up shapes are of limited value because the plotting vectors are lengthened only (not widened) as they are enlarged. They often end strangely-bent at right angles, depending on how the shape was created. In short, scaled-up shapes usually just don't look right.
Exception: Shapes created with the Shape Capture program (page 15) don't look all that bad (just a little transparent) when Scaled up.
Try making line 90 in the example program be SCALE=3 or SCALE=99.

ROT
Rotate a shape by setting ROT before you draw. Try these values in line 80 of page 20's program:
ROT=0: Normal
ROT=16: Rotated 90-degrees Clockwise
ROT=32: Rotated 180-degrees (upside down)
ROT=48: Rotated 270-degrees Clockwise
Values between the above (like 24 or 7) only apply when SCALE is set larger than minimum (1).
ROT values greater than 64 simply repeat the cycle until ROT=255.
Now try changing line 100 to:

```
100 HOME: FOR R=0 TO 255 STEP 16: ROT=R:
    XDRAW 5 AT X,Y: FOR P=1 TO 99: NEXT:
    XDRAW 5 AT X,Y: VTAB 22: PRINT "ROT=";R:
    NEXT: GOTO 100
```

Hi-Res and Shape Table Tricks

MOVING SHAPES

There is more than one way to move a shape. Basically you have to draw the shape, erase it, and redraw it in a new position. In our example on page 19, replace line 100 with these lines:

```
100 FOR X = 0 TO 279 STEP 3
110 XDRAW 5 AT X,50: REM DRAW SHAPE
120 XDRAW 5 AT X,50: REM ERASE SHAPE
130 NEXT X
```

To use DRAW instead of XDRAW, you must erase the shape by re-DRAWing it in the background color:

```
110 HCOLOR=3: DRAW 5 AT X,50
120 HCOLOR=0: DRAW 5 AT X,50
```

Experiment with adding different "delay loops" between drawing and erasing. Like this:

```
115 FOR PAUSE=1 TO 50: NEXT
125 FOR PAUSE=1 TO 1: NEXT
```

USING MORE THAN ONE SHAPE TABLE

To alternate between shape tables, re-poke a new location into the shape table pointer at 232-233 each time you change. This program uses shapes from two shape tables on the Shape Mechanic disk.

```
10 HGR: S1=25000: S2=26000
20 PRINT CHR$(4);"BLOAD DEMO.SHAPES,A";S1
30 PRINT CHR$(4);"BLOAD CURSORS,A";S2
50 SH=S1: GOSUB 500
60 FOR S=1 TO 12: XDRAW S AT S*20,40: NEXT
70 SH=S2: GOSUB 500
80 FOR S=1 TO 12: XDRAW S AT S*20,90: NEXT
90 END
500 POKE 232,SH-INT(SH/256)*256
510 POKE 233,INT(SH/256): RETURN
```

USING FONTS WITHOUT XTYPER OR HI.WRITER

You can. It's a bit awkward, but:

```
10 SH=25000
20 PRINT CHR$(4);"BLOAD F.APPLE,A";SH
30 POKE 232,SH-INT(SH/256)*256
40 POKE 233,INT(SH/256)
60 HGR: ROT=0: SCALE=1
70 A$="Look at me, Mom!"
75 DRAW 1 AT 0,0: REM STARTING POINT
80 FOR L=1 TO LEN(A$)
90 XDRAW ASC(MID$(A$,L,1))-31
95 DRAW 99: REM SEE PAGE 57
99 NEXT L
```

DISPLAY SWITCHES

Look at the "Display Switches" on your Peeks & Pokes Chart. None of the Pokes clear the screen, they simply reveal all or part of a screen.

PAGE-DRAW POKES

The two pokes below disregard which page is currently being viewed. They determine on which page the next DRAW, XDRAW or HPLOT will occur.

Poking other numbers into location 230 produce unpredictable often disastrous results. Try POKE 230,48 and HPLOT, for example. Be prepared to lose your program and re-boot if you try other numbers.

POKE 230,32
Allows drawing on page 1 (so does HGR)

POKE 230,64
Allows drawing on page 2 (so does HGR2)

The program below draws a line on hi-res page 2, but you won't see it until you reveal page 2 by typing "POKE 49237,0".

```
10 HGR2: HGR: HCOLOR=3
20 POKE 230,64: HPLOT 0,0 TO 279,159
```

TO LOAD A HI-RES SCREEN FROM DISK

These two programs load one of the "PIC." files from the Shape Mechanic disk:

```
10 HGR: HOME: VTAB 21: PRINT "LOADING"
20 PRINT CHR$(4);"BLOAD PIC.BBROS.LOGO,A$2000"
30 HOME: VTAB 21
40 PRINT "PICTURE LOADED ONTO PAGE 1"
```

```
10 HGR2: REM NO TEXT ALLOWED HERE
20 PRINT CHR$(4);"BLOAD PIC.BBROS.LOGO,A$4000"
30 REM PICTURE LOADED ONTO PAGE 2
```

You may also load a picture directly (not in a program) by typing: "HGR" (Return), and then:

```
BLOAD PIC.BBROS.LOGO,A$2000
```

TO SAVE A HI-RES SCREEN ON DISK

These two programs each draw a big "X" on the screen and save it on disk:

```
10 HGR: HCOLOR=3: REM *** SAVE PAGE 1 ***
15 HPLOT 0,0 TO 279,191: HPLOT 0,191 TO 279,0
20 PRINT CHR$(4);"BSAVE PIC.X,A$2000,L$2000"
```

```
10 HGR2: HCOLOR=3: REM *** SAVE PAGE 2 ***
15 HPLOT 0,0 TO 279,191: HPLOT 0,191 TO 279,0
20 PRINT CHR$(4);"BSAVE PIC.X,A$4000,L$2000"
```

PHANTOM HI-RES PAGE 3

You can load hi-res pictures into three main memory locations (three that make sense that is), with the following commands:

```
BLOAD PIC,A$2000 (or BLOAD PIC,A8192)
BLOAD PIC,A$4000 (or BLOAD PIC,A16384)
BLOAD PIC,A$6000 (or BLOAD PIC,A24576)
```

The first command loads to page 1. If you do an HGR command first, you can watch the picture load. Same for the second command, but do an HGR2 first. The third command loads to a place in memory that you can't look at. Keep reading and we'll tell you how to actually move a "page 3" picture into view.

MOVING PICTURES FROM PAGE TO PAGE

The program below lets you move a hi-res image to a new location in memory. A moved picture wipes out anything in its path, so be careful. (And Save this program *before* you Run it!)

```
20 GOSUB 1000: REM DO ONLY ONCE
30 PRINT CHR$(4)"BLOAD PIC.BBROS.LOGO,A$4000"
   : REM LOAD A PICTURE ONTO PAGE 2
40 PRINT CHR$(4)"BLOAD PIC.FONT.MECH,A$6000"
   : REM LOAD A PICTURE ONTO PAGE 3
50 HGR: HOME
60 THERE=3: HERE=1: GOSUB 500: REM
   MOVE PAGE 3'S PIC ONTO PAGE 1
70 THERE=2: HERE=1: GOSUB 500: REM
   MOVE PAGE 2'S PIC ONTO PAGE 1
80 GOTO 60

500 POKE 779,THERE*32: POKE 783,HERE*32
510 CALL 778: VTAB 21: HTAB 1
600 PRINT "PAGE "; THERE; " PICTURE"
610 PRINT "PRESS A KEY: ";: GET A$: RETURN

1000 FOR L=778 TO 809: READ V: POKE L,V: NEXT:
     RETURN
1020 DATA 169,64,133,61,169,32,133,63,160,0,
     132,60,132,62,177,60,145,62,200,208,249,
     230,61,230,63,165,63,41,31,208,239,96
```

The pictures in lines 30 and 40 are on the Shape Mechanic disk. In line 500, variable THERE is the page the picture is coming from, and HERE is the page it's going to. Line 510's CALL makes the move.

Shape-Font Programs

1. HI.WRITER (page 32)
This program lets your Applesoft programs put shape-font messages on the screen. You can then save your program on disk for later use.

2. XTYPER (page 43)
This program lets you type directly on the hi-res screen and then save your completed screen on disk.

3. FONT.EDITOR (page 52)
This program lets you create fonts (typefaces) or change characters in existing fonts.

WHAT'S A SHAPE-FONT?
A "font" is a set of letters in a particular style. A "shape-font" is simply a shape table where each shape is a character or symbol. Thirty shape-fonts appear on the Shape Mechanic disk. A printout of each one begins on page 58.

Sample Shape-Mechanic fonts

Use F.WESTERN to give sort of a "Cowboy" look to your displays!!

F.LEFT SHADOW MAKES HI-RES CHARACTERS THAT LOOK 3-D!

What do you call a Font that looks like an L.E.D. DISPLAY?

HEY! WANNA PLAY CARDS?
OR SHOULD WE GO DOWNTOWN?
OR MAYBE EAT SOME LUNCH...
I'd rather play with my f.apple.

SHAPE-FONT ADVANTAGES
Shape-fonts have the distinct advantage of being proportionally spaced. An "I", for example, doesn't need to occupy the same horizontal space as a "W".

Non-proportional spacing
Proportional spacing looks better!

With shape-fonts, the distance between letters, words and lines of type is adjustable. And type doesn't have to be any certain height; it can range from 3 to 16 dots high, and be positioned anywhere on the screen without regard to Vtabs or Htabs.

Shape-font type can be Xdrawn too, so that each character is automatically printed in the opposite of the background color.

SHAPE-FONT DISADVANTAGES
Shape-fonts take up more memory and disk space than other hi-res fonts you may have seen, usually around 18 sectors (or 9 blocks) for large-height fonts and 7 sectors (or 4 blocks) for small-height fonts. You will find fonts on Apple's DOS Tool Kit disk, for example, that only occupy 5 sectors. The difference is in the flexibility and attractiveness of the resulting screen presentations.

Proportional spacing can be a disadvantage when you make a mistake and want to re-type a character. No biggy though; we'll cross that stumbling block when it comes up later in XTYPER.

ABOUT OTHER FONTS
In your encounters with other disks, you will undoubtedly come across other hi-res type fonts. Shape-Mechanic's shape table type is unique, however, and incompatible with other Apple type. (Our Font Mechanic disk has a program that lets you convert type from other sources.)

HI.WRITER

HI.WRITER lets your Applesoft programs do "live" printing of shape-font characters on the hi-res screen. This program has an advantage over the XTYPER program (page 43) in that you don't have to save your hi-res screens on disk (hi-res screens take a lot of disk space). The only disk space required is that occupied by HI.WRITER, your program and your font(s).

NEW AMPERSAND COMMANDS
Once the machine-language file HI.WRITER is in memory, you will have several new "ampersand" commands (commands that start with the character "&") that you can use in your Applesoft programs. See the command card that came with Shape Mechanic for a complete list.

AT LEAST THREE FILES REQUIRED
When you run your ampersand program, the following files should usually all be on the same disk:
1. HI.WRITER: A Binary (B or BIN) file.
2. YOUR PROGRAM: The Applesoft (A or BAS) program that you have written containing "&" commands.
3. SHAPE-FONTS: All of the binary font files (like F.APPLE, etc.) that your program uses.

See "About the Disks" on page 2 for information about transfering files from disk to disk.

Run and List the demo program!

A listing is worth 8192 words (at least) so Run and then List the HI.WRITER.DEMO program on the Shape Mechanic disk, and notice what makes it work.
To Run it, select it from the boot-up menu, or type "RUN HI.WRITER.DEMO".
To stop it before it ends, press Control-C.
To Run it again, type "RUN".
To List it, type "LIST".
To pause the listing, press Control-S.
To halt the listing, press Control-C.

BRUN HI.WRITER, BUT ONLY ONCE!
To acquire the new ampersand commands, you or your program needs to install (load) the file HI.WRITER by using the command "BRUN HI.WRITER". You should only do this once, however, because memory is "eaten up" each time. If you keep loading it, sooner or later, you'll run out of memory.

SOLUTION #1
Type "BRUN HI.WRITER" (that's a typed command, not a command in a program) and then, after loading, type "RUN YOUR.PROGRAM" (that's your Applesoft program with its "&" commands). Then you can re-Run your program as often as you want.

SOLUTION #2
Write a short Applesoft "startup" program that Bruns HI.WRITER, then Runs your program. That way you can re-Run your program as often as you want:

```
10 PRINT CHR$(4);"BRUN HI.WRITER"
20 PRINT CHR$(4);"RUN YOUR.PROGRAM"
30 REM [THAT'S ALL THIS PROGRAM DOES]
```

SOLUTION #3
Make your program start like this:

```
10 REM GOTO 40
30 PRINT CHR$(4)"BRUN HI.WRITER"
31 REM LOAD FONTS (see page 34)
40 REM PROGRAM CONTINUES HERE
```

Then, if you're going to be Running your program several times (to make changes, etc.), after the first time you Run, change line 10 to:

```
10 GOTO 40
```

Before you SAVE your program, change line 10 back:

```
10 REM GOTO 40
```

HI.WRITER Commands

&LOAD: LOAD A FONT FROM DISK

&LOAD(N)="FONT"
N is a value, 1-3.
"FONT" is the name of a shape-font.

You can load up to three fonts into memory at a time. For example, you could start your program:

```
31 &LOAD(1)="F.APPLE"
32 &LOAD(2)="F.BLOCK"
33 &LOAD(3)="F.SMALL.SQUARE"
```

If you have run your program recently, the fonts don't need to be loaded again (no problem, but waiting for them to load is a drag). Solution #3 on the previous page (using GOTO 40) works well here. Just remember to change line 10 before you save.

REPLACING FONTS
You can replace any of the fonts by simply loading another. All higher numbered fonts will be lost. For example, if you replace font 2, you will lose fonts 2 and 3 (if 3 was loaded). For this reason we recommend always replacing the highest numbered font, in this case, font 3.

SHAPE-FONTS ONLY!
HI.WRITER will not function with non-shape table fonts from other programs. Don't even think about trying them (unless you have converted them with the converter program from Font Mechanic).

&FT: SELECT A FONT FOR PRINTING

&FT=N
N is a value, 1-3.

Set &FT equal to 1, 2 or 3 when you want to change fonts. For example, with HI.WRITER installed:

```
70 HGR: &ON: &INIT
80 &FT=1: PRINT "THIS IS FONT #1."
90 &FT=3: PRINT "THIS IS FONT #3."
```

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&ON: ALLOW HI-RES PRINTING
&OFF: ALLOW TEXT SCREEN PRINTING

To send all ouput to the hi-res screen instead of the normal text screen, use the &ON command. All subsequent "output" to the screen, including PRINT statements, will be sent to the hi-res screen until normal output is restored by &OFF. For example, after HI.WRITER is installed and a font is loaded:

```
50 HGR: &ON: PRINT "Hello"
60 FOR I = 0 TO 9 : PRINT I;: NEXT
70 &OFF: HOME: VTAB 21
80 PRINT "GOOD BYE"
```

The above lines will print "Hello" in hi-res, followed by "0123456789". Notice how the semi-colon in line 60 is used to suppress carriage returns (just as it is for the text screen).

The &OFF command in line 70 lets PRINT print on the text screen as it normally does.

ALWAYS TURN IT &OFF
If you don't end your program with an &OFF command, everything, including your program listings and catalogs will be in hi-res. (If you happen to be looking at the text screen, you won't be able to see anything that's being printed.) Type "&OFF" or press Control-Reset to normalize things.

&INIT: SET DEFAULT OPTIONS

The &INIT command sets the HI.WRITER command options to their "default" (normal) values. See the description of each command on the following pages for its default value (if it has one).

PRINT: PRINT!

PRINT (with no "&") prints on the text screen or the hi-res screen, depending whether you last used the &ON or &OFF (see above). Other commands, like LIST and CATALOG, do too.

&X AND &Y: POSITION THE CURSOR

&X=XPOSITION: &Y=YPOSITION
XPOSITION is a horizontal value, 0-279.
YPOSITION is a vertical value, 0-191.
Defaults: both zero

&X and &Y determine the horizontal and vertical coordinates of the upper-left corner of the string (word) being printed. You don't always have to specify new &X and &Y values when you print a word, but you may be surprised where they appear if you don't.

Words printing off the screen will wrap around to the other side of the screen or move to the next line, depending on the setting of &WRAP (page 38).

Due to proportional spacing, a little trial and error might be required to produce attractive screen layouts. (Centering can be automatic; see below.) Enter a test program line, see how it looks by running the program, and make your changes appropriately. If you put a temporary GOTO ## at the beginning of your program (where "##" is the line number you are working on), you won't have to wait through early parts of your program.

&CENTER: CENTER HI-RES TEXT

&CENTER=1 centers upcoming hi-res text.
&CENTER=0 cancels centering (&INIT default).

&CENTER=1 makes all subsequent printing be centered on the screen. Centered text will not be printed until a carriage return occurs (as in a Print statement without a semi-colon). If the words to be printed are too long to fit on one screen line, they will be printed normally (but they still won't fit).

&INVERSE: INVERSE HI-RES TEXT

&INVERSE=1 inverses upcoming hi-res text.
&INVERSE=0 cancels inverse (&INIT default).

Setting &INVERSE to 1 makes the words that follow be printed in Inverse. &INVERSE=0 means Normal type.

A line of Inverse type looks best when "framed" with a space character at either end.

&HCOLOR: HCOLOR

&HCOLOR=N
N is a color 0-7. (&INIT default is 3, white.)

&HCOLOR determines the color of the words that follow. Use color with large shape-fonts only. Color type looks best when printed on a black background.

&ROT: ROTATION

&ROT=0 means not rotated (&INIT default).
&ROT=1 rotates 90-degrees clockwise.
&ROT=2 rotates upside down.
&ROT=3 rotates 90-degrees counter-clockwise.

Rotation can be tricky, so plan ahead. Remember, &X and &Y change the starting point of the upper left corner of the first letter printed.

&CLEAR: CLEAR THE HI-RES SCREEN

&CLEAR=N
N is a hi-res color, 0-7. (&INIT default is zero.)

Specifying a value for &CLEAR will clear (erase) the entire screen in a hi-res color. To clear the screen in black you can use HGR or HGR2 instead.

&SCROLL: CONTROL SCROLLING

&SCROLL=1 allows scrolling
&SCROLL=0 cancels scrolling (&INIT default)

Setting &SCROLL to 1 will allow the hi-res screen to scroll (move) up like normal text does when you print on the bottom line of the screen. This only works if rotation is zero. &SCROLL=1 sets Leading (below) to zero.

&WRAP: CONTROL WRAPAROUND

&WRAP=1 allows wraparound
&WRAP=0 cancels wraparound (&INIT default)

Setting &WRAP to 1 will cause anything printed beyond the end of the screen line to "wrap around" and overwrite the beginning of the same screen line. Setting it to 0 will cause the text to continue at the beginning of the next line.

&LEAD: ADJUST LEADING

&LEAD=N
N is a value, 0-16. (&INIT default is 2.)

Leading (pronounced "ledding") is the number of vertical dots between lines of characters.

&KERN: ADJUST KERNING

&KERN=N
N is a value, 0-2 (&INIT default is 2)

Kerning is the number of horizontal dots between characters on the screen.

COMBINING TEXT AND HI-RES

Don't forget, the &OFF command makes Apple's good old text screen available. The "&" commands on this page let you switch and combine text and hi-res.

&SPLIT: SPLIT-SCREEN GRAPHICS AND TEXT
&FULL: FULL-SCREEN GRAPHICS

A &SPLIT command reveals the lower sixth of the text screen (Vtab 21-24) leaving the upper screen for hi-res commands. &FULL switches you back to full hi-res with the text screen "hidden" behind.

```
50 HGR: HOME: &ON: &INIT
60 PRINT "THIS IS HI-RES TEXT"
70 &OFF: &SPLIT: VTAB 21:
80 PRINT "...AND TEXT SCREEN TEXT."
```

TEXT: SWITCH TO TEXT SCREEN

A TEXT command (with no "&") switches you to a text screen display, as usual, without erasing your hi-res image. PRINT commands still won't print on the text screen until you use &OFF.

&HIRES: SWITCH TO HI-RES SCREEN

A &HIRES command switches you to hi-res display without clearing the screen. (Use HGR, HGR2 or &CLEAR=N if you want clear the hi-res screen.)

&PAGE: SWITCH PAGES

&PAGE=1 reveals page 1 (text or graphics)
&PAGE=2 reveals page 2 (text or graphics)

If you switch pages, you might find that you still can't print on that page. To change the page that you are printing on, use the command "POKE 230,32" or "HGR" (for hi-res page 1) or "POKE 230,64" or "HGR2" (for hi-res page 2).

UPPER AND LOWER CASE

Apple II+'s only: On older Apples, you can't easily type in lower case. If you have this problem, run out and buy a copy of Beagle Bros' GPLE (Global Program Line Editor). Direct upper and lower case keyboard entry is just one of its many advantages.

Next best, you can set up an upper/lower case "toggle" character in your ampersand programs. Now, every time you print that character, it will toggle from upper to lower case or back. For example:

```
10 &CASE$="@": REM DO THIS ONLY ONCE
20 PRINT "B@EAGLE @B@ROS@"
```

The above example will cause "Beagle Bros" to be printed in upper and lower case. You can re-program "@" to be any character you want (in case you want to actually print some @'s on the screen) by specifying another upper and lower case toggle character. For example,

```
30 &CASE$="/"
40 PRINT "S/MITH /B/ROS/"
```

You can turn off this feature completely by setting &CASE$ equal to CHR$(0).

NON-KEY CHARACTERS

Apple II's and II+'s only: On older Apples, you can't directly type the characters "_ \ [ ] {" or the delete-character. You can, however, use "character-string" equivalents. From the back of your Peeks & Pokes Chart:

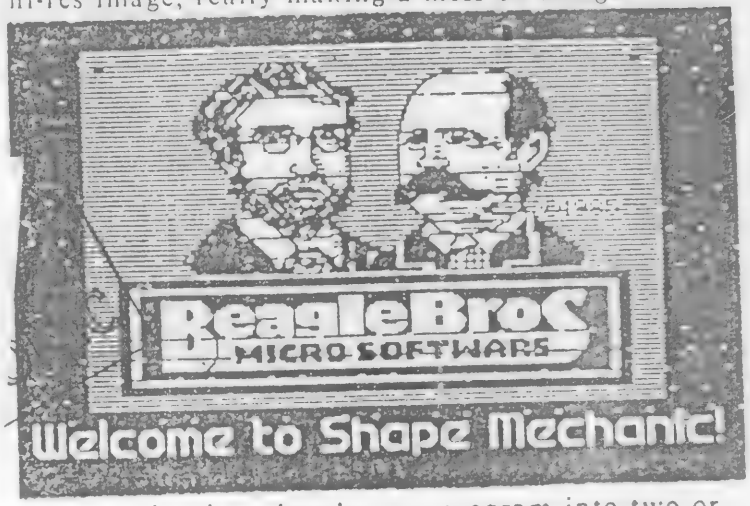
CHR$(91) is the left square bracket.
CHR$(92) is the backslash.
CHR$(95) is the underscore.
CHR$(123) is the left brace.
CHR$(124) is the vertical bar.
CHR$(127) is the delete character.

For example, the command **PRINT "[ABC"; CHR$(91)** would print [ABC] on the screen.

HI.WRITER Problems

LITTLE WHITE LINES = BAD NEWS

Your ampersand program must not be so large that it overwrites the hi-res screen. If it does, you will get uncalled-for little horizontal stripes on your hi-res image, really making a mess of things.



One solution is to break your program into two or more programs and put a command like this at the end of each one:

```
5000 PRINT CHR$(4)"RUN NEXT.PROGRAM"
```

For other tricks, see "More Room for Hi-Res Programs" on page 68.

OTHER ERRORS

?Syntax Error means just that. Here are some other errors you might encounter:

1. **?Illegal Quantity:** You tried to print outside the limits of the screen.
2. **?Illegal Quantity:** You used an illegal number in one of the ampersand commands.
3. **File (or Path) Not Found:** A file that your program tried to load from disk wasn't there.
4. **?Out of Memory:** You installed HI.WRITER too many times (see page 33).

Always take note of the last character printed on the screen; it was just after that that your error occured. Type "TEXT" or press Control-Reset to find and correct the error.

HI.WRITER Technical Notes

1. HI.WRITER can be used with other software that uses the ampersand, thanks to "daisy chaining". When HI.WRITER is loaded, it looks to see if any other program is using the ampersand vector. If so, ampersand commands not recognized will be sent along to the other routine for processing.

2. If HI.WRITER should somehow become disconnected (you'll know because the ampersand commands won't work), you can reconnect it by typing "CALL 973".

3. The default address for loading fonts is 24576 ($6000). The addresses are stored in the beginning of the HI.WRITER program itself. After HI.WRITER is loaded, type:
   "START=PEEK(974)+PEEK(975)*256"
   This will tell you where the HI.WRITER program starts in memory. You can then Poke a new load address for font 1 at START+3 (lo-byte) and START+4 (hi-byte).
   Font 2's load address is set up (after font 1 is loaded) as 1 plus the end of font 1. The address for font 3 is 1 plus the end of font 2. Their load addresses are stored at [START+5, START+6] and [START+7, START+8] respectively. You may change them too.

XTYPER

Shape Mechanic's XTYPER program lets you type directly onto the hi-res screen using up to three shape-fonts at a time. You may want, for instance, to label a diagram or graph that you have plotted with another program. Or you may want to make a title screen from scratch. After you have added type to your picture (or to a blank screen), you can save the entire image on disk.

TWO FILES REQUIRED
When you first start out, the following two files must be on the same disk:
1. **XTYPER**: An Applesoft (A or BAS) file
2. **XTYPER.ML**: A Binary (B or BIN) file
You will also be loading at least one shape-font file (like F.APPLE, etc.). Your fonts may be on the same disk as the two files above, or you may insert your font disk later when you load fonts, or you may use your font disk from your second disk drive, if you have one.
See "About the Disks" on page 2 for information about transfering files from disk to disk.

To use XTYPER, select it from the boot-up menu, or type "RUN XTYPER".

THE MAIN MENU
Running XTYPER displays the main menu and lets you load fonts from the disk, clear the hi-res screen, load and save hi-res images, and perform other disk operations. After you have loaded at least one font, you can leave the menu and begin typing by pressing Return.

```
XTYPER LETS YOU TYPE CHARACTERS ONTO THE
HI-RES SCREEN USING SHAPE-FONTS. YOU MAY
SAVE THE COMPLETED PICTURE TO DISK AFTER
PRESSING <ESC> TO RETURN TO THIS MENU.

TYPE WITH NUMBER OF FORMAT FONT

<1> FONT
<2> FONT:
<3> FONT

FOR SELECTED

<E> ERASE HI-RES SCREEN
<L> LOAD HI-RES PICTURE
<S> SAVE EXISTING PICTURE
<C> CATALOG DISK (OR LOCK/UNLOCK FILES)
<D> DRIVE NUMBER (NOW 1)
<Q> QUIT PROGRAM

<RETURN> BEGIN TYPING
<ESC>    RETURN TO THIS MENU

SELECT: <■>
```

See Prefix, Drive, Catalog and Quit on page 7.

Besides the options described on page 7, XTYPER's main menu offers these choices:

1, 2, 3: LOAD A FONT

You may load up to three shape-fonts from the current drive, in any order you wish. Press "1" to load font 1, "2" to load font 2, or "3" to load font 3. Then type the name of the font (in upper case). The font will be loaded into memory. If you get a "File Not Found" error, see below.

You may replace any font any time you wish. If you replace font 1 or font 2, all higher-numbered fonts will be lost. If you plan on changing fonts several times, replace the highest numbered font, so that the other fonts will remain intact.

If you attempt to load font 2 or font 3 when there is a lower number unused, your font number will be changed to the lowest unused number.

FILE NOT FOUND?
- Be sure the font is on the disk. Catalog and see.
- Be sure you typed the font name in UPPER CASE.
- Be sure you have the right drive selected.
- Be sure you included the "F." in the font's name. (Or, on old Apple Mechanic and Typefaces fonts, be sure you included the "]" character.)

E: ERASE THE HI-RES SCREEN

If you want to type on a blank screen (instead of a picture loaded from disk), erase the screen by pressing "E" (then "Y" when asked for approval). Otherwise you will might encounter a "snowy" background or some other unwanted image. If this happens, press Esc to get back to the menu. Then press "E" to erase.

Return: BEGIN TYPING

Press Return to begin or continue typing on the hi-res screen. You must have loaded at least one shape-font to type.

TYPING WITH XTYPER

After you have loaded at least one font from the main menu and pressed Return, you will see a rectangular cursor on the screen that corresponds to the approximate height of the current font and the current case, upper or lower.

Now you can type on the screen and use the commands described on the command card that came with Shape Mechanic. You will get best results if you type in white (any type size) or in color (large fonts only) on the black background areas of the screen.

PLAY AROUND AND LEARN

Play around with XTYPER until you get the hang of it. Typing is easy. The most difficult thing to get used to is correcting mistakes. (You do make your share of mistakes, you know.) Thanks to shape-font proportional spacing, you can't simply back up and type over a mistyped word or character. Page 48 tells you how to make repairs.

The other "foreign" thing is that the cursor can be located at any point on the screen, so you need to develop some skill in moving the cursor. So turn the page.

BASIC ELECTRONICS

MOVING THE CURSOR WITHOUT TYPING

Several commands move the cursor on the screen without typing or erasing characters.

Left/Right Arrows:

MOVE LEFT AND RIGHT

The left and right Arrow keys move the cursor left and right one dot or one character (approximately), depending on the last setting of Control-O (below).

For long distance moves, hold down the Arrow key and the cursor will continue moving in that direction. If your Apple has a Repeat key, you'll have to hold it down too.

Up/Down Arrows

(or Control-A/Z): MOVE UP AND DOWN

The up and down Arrow keys move the cursor up and down one dot or one type line (approximately), depending on the last setting of Control-O (below). If your Apple doesn't have up and down Arrow keys, use Control-A and Control-Z instead.

Control-O: OTHER MOVE MODE

Press Control-O to toggle between making the Arrow keys (above) move the cursor one dot or one character (or type line). If the cursor isn't moving the way you want, press Control-O again.

Return: CARRIAGE RETURN

Pressing Return while typing moves the cursor to the left margin on the next line down. To change the vertical distance the cursor will move, see "Distances" on page 49.

You will get an automatic carriage return if you try to type near the right edge of the screen. If you don't like this, see Control-W on page 50.

Control-@: CURSOR HOME

Press Control-@ (Control-Shift-2 or Control-Shift-P depending on your Apple) to move the cursor to the upper-left "home" corner of the screen.

ERASING WORDS AND CHARACTERS

One disadvantage of proportionally-spaced type is the difficulty of making corrections. XTYPER gives you several ways to erase (and typing a space over a character is not one of them).

Before you try the commands on this page, the top of the cursor must be aligned (it usually already is) with the top of a capital letter on the line of type on which you wish to make an erasure. Got it? Good. Here are your options for erasing:

Control-B: BACKSPACE/ERASE

Place the left of your cursor at the right of the character you want erased. Now use Control-B as a backspace/erase key. A vertical black (or background color) line will be drawn at the left edge of the cursor, and the cursor will move one dot to the left. Continue pressing Control-B until you are through erasing.

Control-E: CHARACTER ERASE

This method works only with white type on a black background. Align your cursor vertically as described above, and position its left edge so it touches any part of the character to be erased. Now press Control-E and the character will be erased in black. "Stencil" style characters will often only be partially erased due to their split design.

Control-L: LINE ERASE

Typing Control-L will erase an entire line of type in black (or the background color) from the top of the caps cursor to the bottom.

OVERTYPING

Another way to erase a word is to type the same word over it in the background color. This method is practically impossible.

Control-F: FONT CHANGE

Pressing Control-F while typing will allow you to select a new typing font (1-3). You may not, of course, select a font number that has not been loaded into memory. Press Esc if you want to load another font from the main menu.

Control-S: SET COLORS

Pressing Control-S while typing will allow you to select a new typing color (foreground color) and a new erase color (background color).

Due to Apple's hardware configuration, typing in colors other than white or black might present some surprises. Characters with thin verticals could look distorted, especially on a non-color monitor. Also, small characters are unreadable in colors other than black or white. And colored type or lines on a color background will tend to "vibrate" and produce "stair-stepped" edges.

Apple's hi-res hardware is designed to best support colors on a BLACK BACKGROUND.

Control-C: CENTER TEXT

Pressing Control-C will center the text that is aligned with the cursor. This feature is only available if Rotation is set to 0 or 2. It also can only center to the nearest "byte boundary" (plus or minus 6 dots). If this doesn't meet your needs, or if you need to center text in Rotation 1 or 3, you can "eyeball" it. Or use HI.WRITER.

Control-D: DISTANCES

Pressing Control-D lets you adjust the "Kerning" and "Leading" distances between characters. Kerning is the horizontal distance between characters. Leading (pronounced "ledding") is the vertical distance between lines of type. (With leading set to 2, a lower case "g" over an upper case "E" would have a vertical gap of two dots.)

Testing.... Testing..... Testing.....
LEADING 1 LEADING 2 LEADING 3

Kerning set to 0 in this sample.
Kerning set to 1 in this sample.
Kerning set to 2 in this sample

Control-I: INVERSE

Pressing Control-I turns on Inverse typing mode. All characters typed on the screen will have a "negative" appearance, with the foreground and background colors swapped. Inverse type looks best if you put a space before and after a line of type.

Control-N: NORMAL

Pressing Control-N turns on Normal typing mode, canceling Inverse.

Control-R: ROTATION

Pressing Control-R lets you select from four different rotations, including sideways and upside down. Rotation 0 is for normal typing. Rotation 1 lets you type 90 degrees clockwise (sideways). Rotation 2 lets you type upside down. And Rotation 3 lets you type 270 degrees clockwise (sideways).

The function of the Arrow keys is affected by changing the rotation. For example, if you select a rotation of 1, pressing the Left Arrow key will backspace relative to the direction you are typing. A little experimentation will demonstrate this better than we can explain it.

Control-W: WRAP-AROUND

Pressing Control-W switches wrap-around off and on. With wrap-around on, typing off the right edge of the screen will "wrap around" to the left edge without dropping to the next line. To move down a line, press Return as you would on a typewriter. With wrap-around off, typing off the right edge of the screen will automatically move the cursor down to the beginning of the next line.

Control-X: UPPER AND LOWER CASE

For Apple II+'s only: Pressing Control-X will switch between upper and lower case. The cursor height will change accordingly. (Since shape-fonts can vary in character height, the height of the cursor might not exactly match.)

Control-P/Q/T: NON-KEY CHARACTERS

For Apple II+'s only: Six characters on ancient Apples have no corresponding keys. XTYPER gives you an alternate keys:

- **Control-P** types a "[" in upper case and a "{" in lower case. (The right-square bracket and right brace are typed with Shift-M as usual).
- **Control-Q** types a "\" in upper case and a "|" in lower case.
- **Control-T** types an underscore in upper case and a delete-character in lower case.

Control-G: GRID

Press Control-G while typing to display a 4x4 grid on the screen. Press Control-G again to erase the grid. The purpose of the grid is to display the edges of the hi-res screen and to give some visual reference for aligning and centering type.

Don't type over the grid. If you do, erasing the grid will draw lines through characters.

Esc: RETURN TO THE MAIN MENU

Pressing Esc while typing will display the main menu, so you can save or load a picture, load a new font, clear the screen, catalog the disk or quit the program.

FONT.EDITOR

The FONT.EDITOR program is similar in concept to SHAPE.EDITOR, but specialized to create shape-fonts. There may be up to 95 characters in each font; each character may be redesigned to become any character, picture or symbol, so long as it fits within the maximum dimensions of the Editor.

TWO FILES REQUIRED

When you first start out, the following two files must be on the same disk:

FONT.EDITOR: An Applesoft (A or BAS) file
FONT.EDITOR.ML: A Binary (B or BIN) file

See "About the Disks" on page 2 for information about transfering files from disk to disk.

To use FONT.EDITOR, select it from the boot-up menu, or type "RUN FONT.EDITOR".

MAIN MENU

You will then see the main menu at the bottom of the screen. You can usually "escape" to this part of the program by pressing the Esc key. See Prefix, Drive, Catalog and Quit on page [illegible].

Above the main menu, you will see a plotting grid and the 95 characters currently in memory. If you are just starting, you might see 95 white dots instead. Each dot is actually a hi-res shape in a shape table. If you wanted a font with just a few characters, you could start with this dot "font" and add your special characters, or you could load one of the complete fonts on the disk (using Option "L") and change a few characters.

SHAPE-FONTS ONLY

Only shape-fonts can be edited with this program. Others may load but will not be compatible or editable. If you have fonts from other programs that you want to use, you will need to convert them with the convert program on our Font Mechanic disk.

LARGE FONTS VS. SMALL FONTS

All shape-fonts are classified as "Large" or "Small". Small fonts correspond approximately in height to Apple's normal text characters. The Font Editor limits small fonts to 7 x 8 dots. Large fonts are roughly twice as high and wide, the limit being 14 x 16 dots.

All font names on the Shape Mechanic disk are receded by "F.". All are large-height fonts, except those with the word "SMALL" in their names. Another way to recognize size is by cataloging a disk: Full 96-character large fonts tend to be 16-20 sectors (or 8-10 blocks), and small fonts 6-10 sectors (or 3-5 blocks).

You may, of course, create small characters in a large font, but not vice versa.

ABOUT THE PLOTTING GRID

The size of the plotting grid depends on whether a large (14 x 16) or small (7 x 8) font was most-recently loaded. The dotted lines on the grid have no function other than to serve as visual guides for lower case, descenders and so on.

For consistency, all characters should be drawn against the left edge of the grid.

LOAD A FONT AND PRACTICE

To experiment with editing fonts (next page), press "L" from the main menu, and then type "F.APPLE" to load that font from the Shape Mechanic disk. Another one that's more unusual is on the back of the disk: "F.WIDGETS".

EDITING CHARACTERS

1. PRESS "E" TO BEGIN

After you have loaded a font (Option "L"), press "E" to begin the editing process. A flashing cursor will appear on one of the characters.

2. SELECT THE CHARACTER TO BE EDITED

Move the cursor to the character you want to edit or replace, using the four Arrow keys. Use A & Z if your Apple doesn't have up and down Arrow keys.

Below the character set, you will see the ASCII value of the key that will eventually type the character (for example, KEY "!", ASCII 33). The Space character, ASCII 32, is the only one not accessible from the Editor.

Press Return when the cursor is on the character you want to edit.

3. SELECT AN IMPRINT OPTION

Now you have three options:

I: IMPRINT Press "I" (or just Return) to imprint the selected character as an 8x blow-up on the grid. This option is good for making minor changes to a character, since most of the character will already be drawn for you.

E: ERASE/REDRAW Press "E" to temporarily erase the character from the screen so you can completely redraw it.

S: SHADOW IMPRINT Press "S" to print a "shadow" of a character on the 8x grid. The shadow is for reference or tracing purposes only and does not affect the character's appearance.

4. DRAW OR RE-DRAW THE CHARACTER

After you press "I", "E" or "S", you will see a round dot cursor, flashing in the upper-left corner of the grid. The Arrow keys (and A & Z) will move the cursor within the confines of the grid.

Press the Space Bar to change the cursor from solid (plot) to outlined (no-plot) and back. Play around to see how it works.

Notice that the actual-size character in the font to the right changes as you plot on the grid. You won't have the problem of dots unplotting when you plot over them (as in SHAPE.EDITOR), because you are not actually creating the shape yet, only sketching it. The actual shape vectors will be created by the Editor, so there is no need to be "efficient" when you plot.

Continue plotting and unplotting until the character looks the way you want it.

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5. STORE THE CHARACTER IN MEMORY

Press Return to store the character in memory (or Esc to quit editing). A cursor will appear on the right side of the screen, and you will be asked to "Select Character to Replace". The character you just drew can now replace any one of the 95 characters on the screen. Usually you will want to replace the same character you first selected in step 2, so press Return to insert the new character into memory.

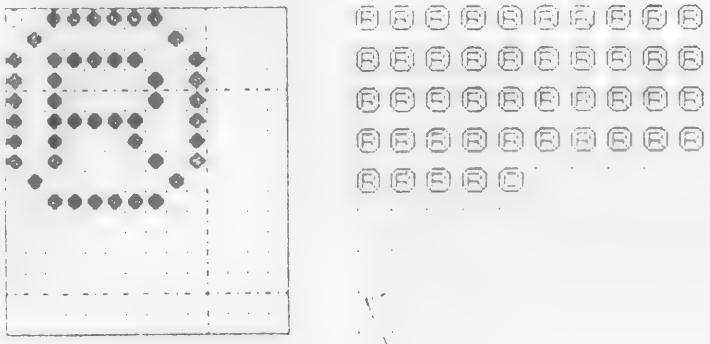
6. SAVE YOUR NEW SHAPE-FONT

Press "S" to save your font on disk. Give it a new name or you will lose any font already on the disk that has that name.

T: TEST-TYPING
The Font Editor features a full-screen character typer for testing the appearance of your edited characters. Select "T" from the main menu and type as you normally would. If you have an older Apple, use Control-X to toggle between upper and lower case. Press Esc or type in the bottom right corner of the screen to return to the main menu.

Because of program space limitations, the backspace key does not function here, however the Return key does. There is no way to move the cursor with the arrow keys, or to save an image either; this mode is for test purposes only. To type and save hi-res images, use XTYPER or HI.WRITER.

THE REPEATING-CHARACTERS QUIRK
If you start with a dot (blank) font, add only a few characters and re-Run the program, you will sometimes see a shape repeated several times. No problem; to avoid this quirk, only edit the lowest numbered dots in the font.



Font Editor

Shape-Font Technical Notes

Here are some technical details regarding the fonts, cursors and locations used by the shape-font programs on Shape Mechanic.

Shape #1 is always the space character. It cannot be redefined by FONT.EDITOR.

Shapes #97, #98 and #99 are "between-characters" shapes that move without plotting from the bottom right of a character to the top left of the next character. Shape #97 puts no separation between characters (kerning of 0). Shape #98 puts one dot of separation between characters (kerning of 1). Shape #99 puts two dots of separation between characters (kerning of 2).

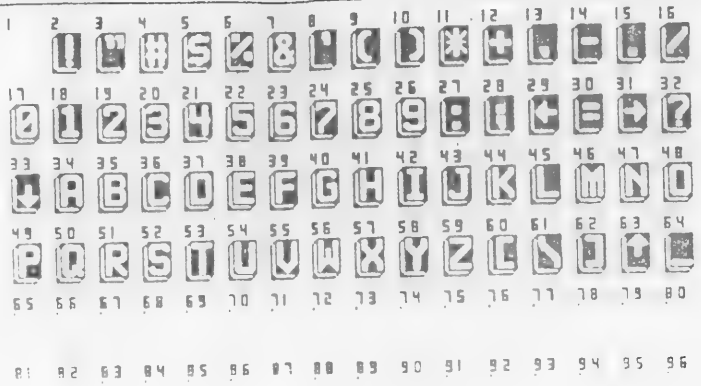
Shape #100 is a "do nothing" shape, shape byte #25, handy for putting the hi-res cursor where you want it without moving or plotting.

Byte #2 of all shape-fonts is set to 1 for small fonts and to 2 for large fonts.

CURSORS: This shape table is put to extensive use in Shape Mechanic. Shapes 1 and 2 are the solid and outlined plotting cursors in FONT.EDITOR. Shape 3 is a dot, used as a scanner for reading shapes and blown up to draw the grid in XTYPER. Shapes 4 and 5 are the upper and lower case cursors for XTYPER. Shape 6 is the shadow marker for FONT.EDITOR. Shape 7 is an underscore cursor that didn't get used. Shapes 4-7 all start and end at the upper left, making them good flashers; coordinates don't have to be specified every time they are drawn. Shapes 8 and 9 are the SHAPE.EDITOR cursors.

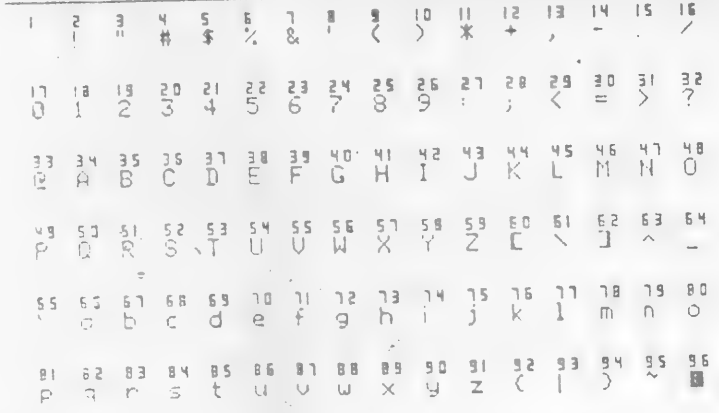
CURSORS is usually loaded at 16384 ($4000) or 24576 ($6000). The shapes being created or used are then loaded at 16640 ($4100) or 24832 ($6100). To access one shape table or the other, the pointer at 232,233 ($E8,$E9) is changed.

F.ACE



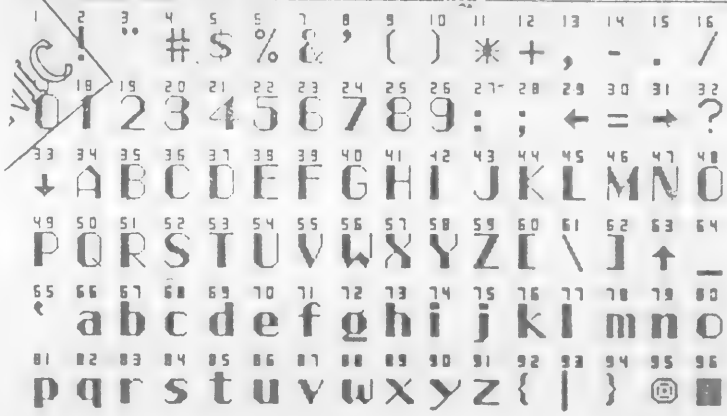
F.APPLE

F.ASCII.SMALL



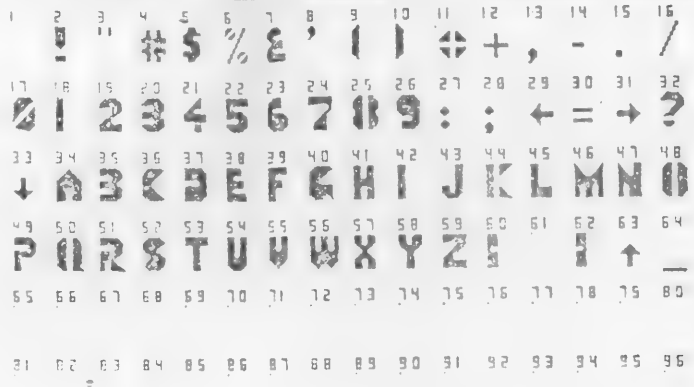
F.BLOCK

F.BROADWAY

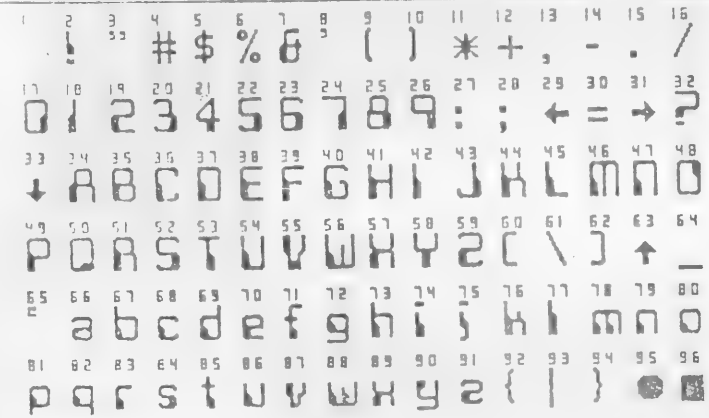


F.BROADWAY.2

F.CHOMP

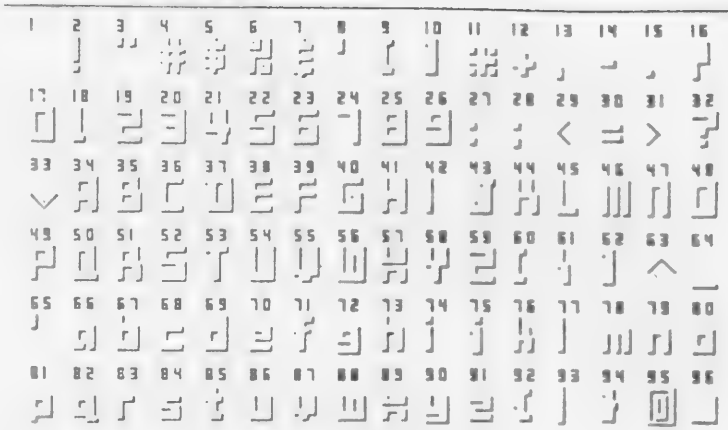


F.COMPUTE



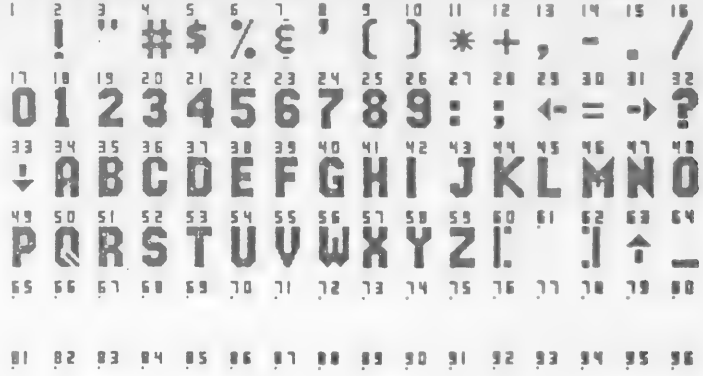
F.COMPUTE.SMALL

F.EMBOSSED

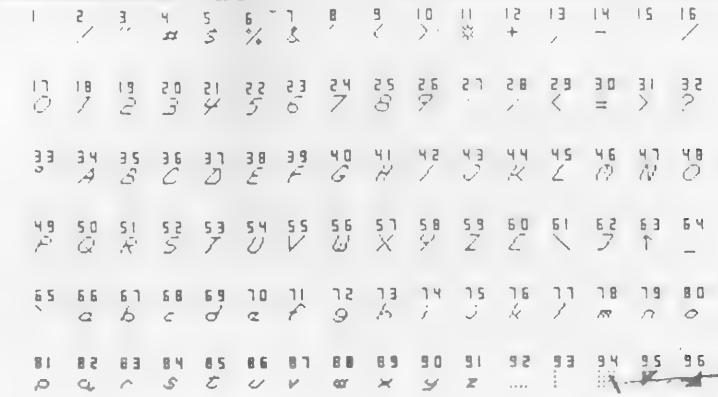


F.ENGLISH.SMALL

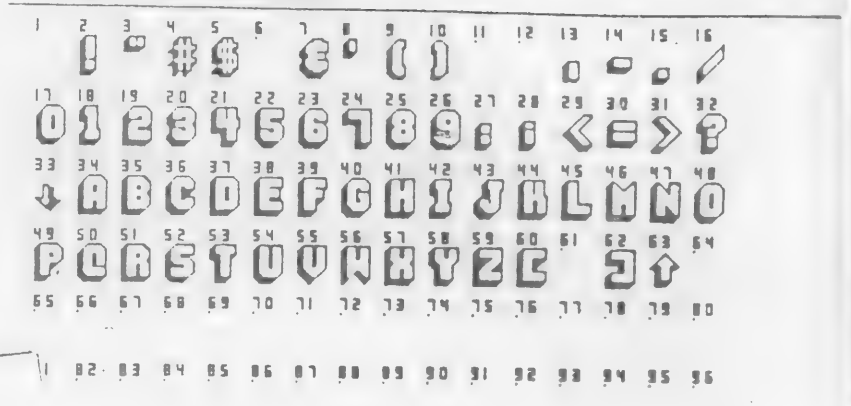
F.FATSO



F.ITALIC.UGLY

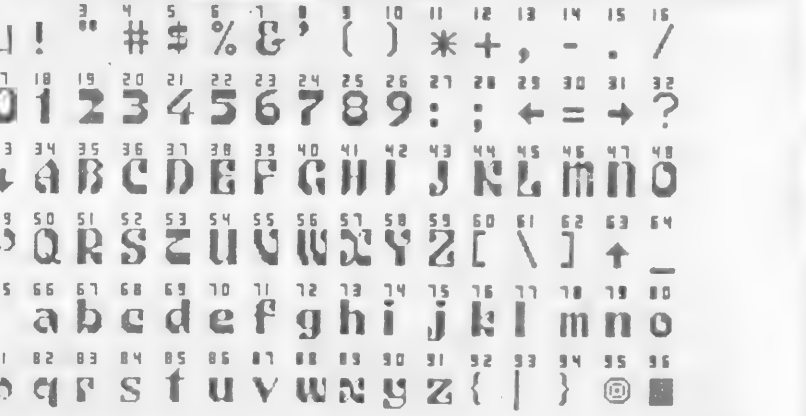


F.LEFT.SHADOW

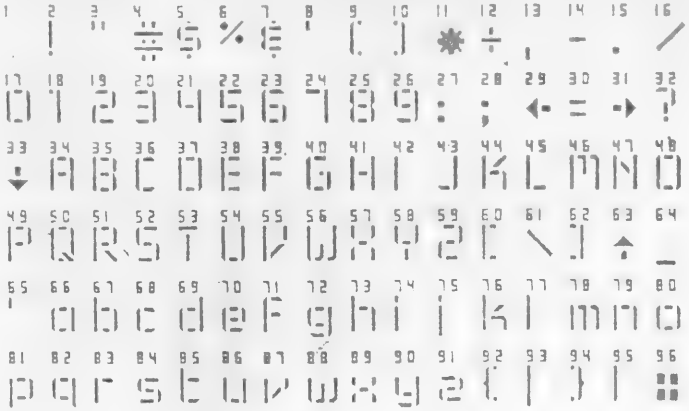


F.JAGGED.SMALL

MOD

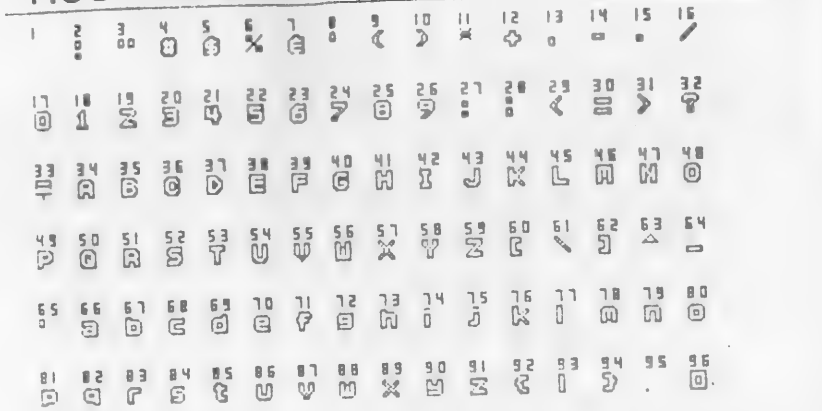


F.L.E.D



F.OUTLINE

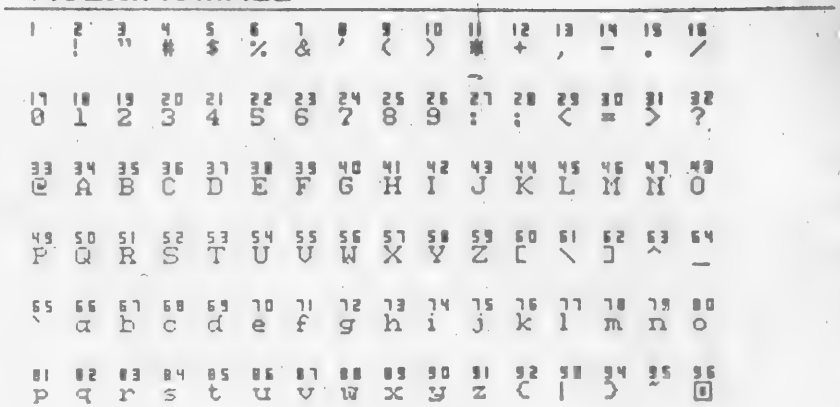
F.OUTLINE.SMALL



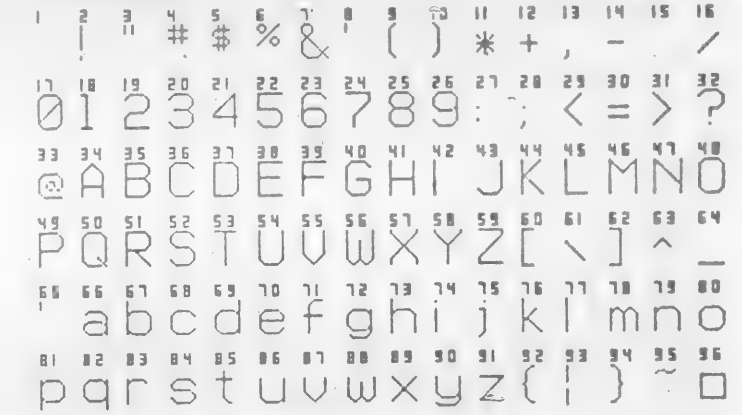
F.PARALLEL

F.PENMAN

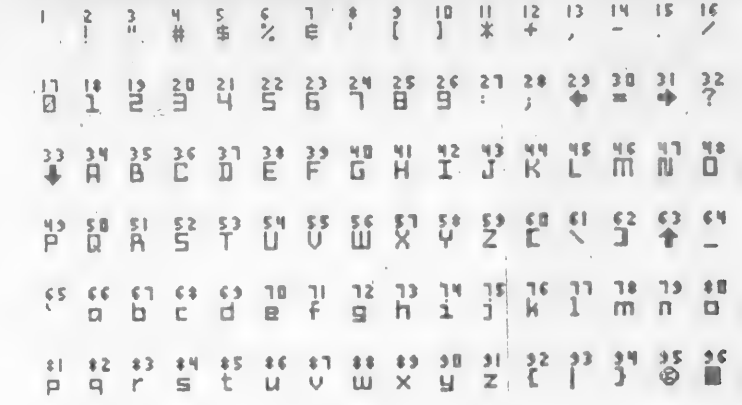
F.SERIF.SMALL



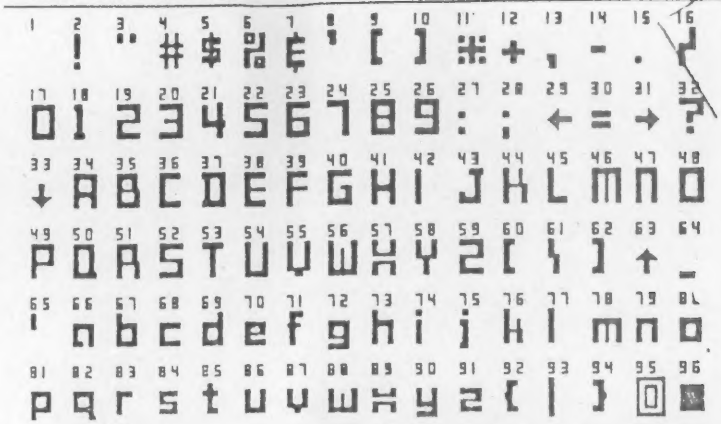
F.SKINNY



F.SQUARE.SMALL

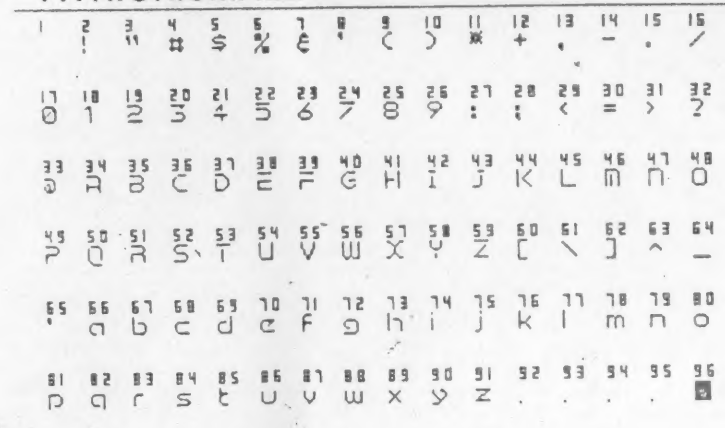


F.SQUAREBALL

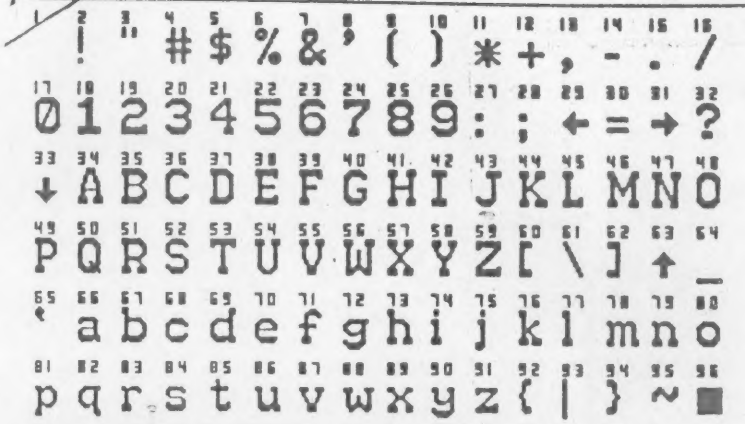


F.STENCIL

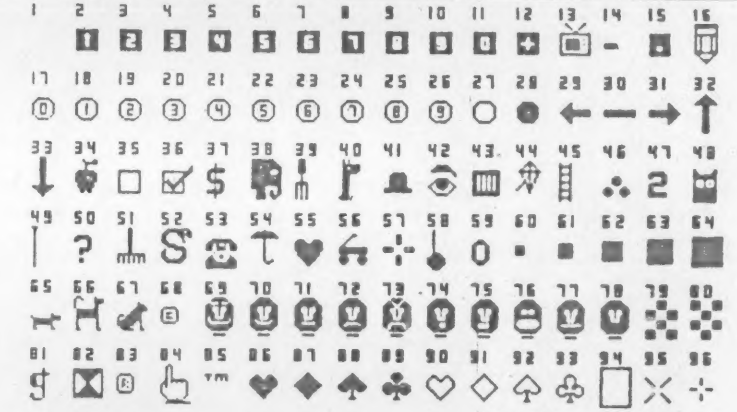
F.TRICK.SMALL



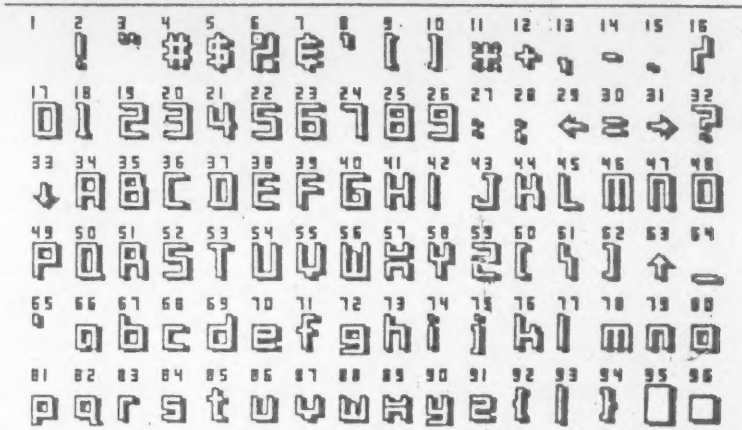
F.WESTERN



F.WIDGETS



F.ZOOLOO



More Room for Hi-Res Programs

If your hi-res programs are getting so large that you're seeing little glitches on the hi-res screen (see picture, page 41), then this page is for you. Refer to the "Main Memory Map" on the back of your Peeks & Pokes Chart. If you don't understand it, you can still try the solutions below.

An Applesoft program normally starts at location 2049 ($0801) and can be nice and long, ending somewhere up in the 36,000 range. However, right in the middle of all this, starting at location 8192 ($2000) are hi-res pages 1 and 2. So a normally-loaded Applesoft program must fit between 2049 and 8000 or so, depending on the number of variables in the program (the more variables, the more room a program occupies).

SOLUTION #1
Use hi-res page 2. Just start with HGR2 instead of HGR, and subsequent plotting commands will happen on page 2. Now your program can be 14,000 bytes long instead of only 6,000 (approximately). You can't use the 4 text lines below hi-res, however.

SOLUTION #2
Use a "LOMEM:24576" command at the start of your program. This will make Applesoft store variable information above page 2 instead of at the normal location between your program and page 1. Use "LOMEM:16384" if you don't need page 2.

SOLUTION #3
Load your entire program above both hi-res pages at 24576 (or at 16384 if you are not going to use page 2). If you insert the following program line at the beginning of your program, it will do the trick:

```
1  LOC=24576+1: IF PEEK(103)+PEEK
   (104)*256< >LOC THEN POKE LOC-1,0:
   POKE 103,LOC-INT(LOC/256)*256:
   POKE 104,INT(LOC/256): PRINT
   CHR$(4);"RUN THIS.PROGRAM"
```

Note: Be sure to SAVE your program with the above line added *before* you run it.

Shape Mechanic Technical Notes

All programs on the DOS 3.3 Shape Mechanic disk will operate correctly even if DOS has been moved to the language card (also called a RAM card and bank-switched memory). They are also completely compatible with ProntoDOS (naturally).

When requesting input, all the programs accept upper and lower case. You should, however, be sure that you enter all file names in upper case under DOS 3.3. ProDOS automatically converts all file names to upper case.

We suggest that you not make any changes to any of the programs on the Shape Mechanic disk. If you decide to, however, make sure that you do so on a backup copy of the disk. This will ensure that you always have a good, working copy of each program. Also, make sure that you make your changes on a fresh (just loaded) copy of the program that hasn't been run. Most programs on the Shape Mechanic disk delete one or more lines upon ending.

Error Messages

Most error messages will relate to disk errors occuring when you are loading or saving files.

WRITE-PROTECTED means that you're are trying to save a file on a disk that has no write-protect notch, or the notch has a tab over it.

FILE NOT FOUND means the file you requested is not on the disk (or you spelled its name wrong), or you are using a disk that does not have the CURSORS file or the machine language subroutine file for a particular program.

I/O ERROR generally occurs when you try to access a disk and there isn't one in the drive, or you are working in DOS 3.3 and there is a ProDOS disk in the drive or vice-versa, or the disk is damaged or copy-protected.

DISK FULL happens when you try to save a file to a disk that doesn't have enough room on it. Try another disk that has been formatted.

FILE LOCKED means that you have tried to save a file that shows up as locked in the catalog. Unlock the file or save under a different name.

SYNTAX ERROR usually occurs because you have entered a file name that doesn't begin with a letter (A-Z) or has illegal characters in it. For instance, file names under ProDOS may only include letters, numbers and periods.

FILE TYPE MISMATCH usually means that the file name you entered is not that of a binary file. For example, when loading a picture, you accidentally type the name of an Applesoft file.

Occassionally error messages will be referenced by number. See your Beagle Bros Peeks & Pokes Chart (left column, location 222) or your Applesoft Manual for error message codes. If you suspect you have made an error, remove the ONERR statement from the beginning of the program you are working with. Then you can list the offensive line and get a clue regarding what's happening.

(Thinly-disguised advertisement)

NEW **Font Mechanic**

30+ ALL-NEW FONTS FOR SHAPE MECHANIC by Mark and Jon Simonsen

$29.95, Compatible with any Apple II—DOS 3.3 and ProDOS

NEW TYPE, NEW UTILITIES

Font Mechanic is a companion to our Shape Mechanic disk (previous page). It gives you 30+ new fonts to use in your programs (samples shown below), plus a new set of utilities for manipulating shape fonts as well as hi-res fonts from other sources.

FONT CONVERTER

Font Mechanic lets you convert non-shape table fonts from disks like Apple's *DOS Tool Kit*™, *Higher Text*™, *Higher Fonts*™, the Penguin disks, *Beagle Graphics*™, and so on.

All fonts are compatible with programs on Shape Mechanic and Apple Mechanic.

FONT SCALER

This program lets you change the horizontal and/or vertical dimensions of a font for special emphasis or special effects.

NORMAL NORMAL
WIDE
SKINNY TALL
SHORT

CAT MENU TOO

Here is a *fast* machine language disk menu program that lets you select ProDOS or DOS 3.3 files with one keystroke. Features include fast on-screen file sorting and a handy on-screen Help page, in case you left your instructions at home.

FONT MECHANIC Type Sampler (30+ fonts total on the disk)

AMERICAN: AB
ZEBRA: abcdef
GOTHIC: abcd
Caesar: abcd
BELLS: ABCDE
U.S. OPEN: A
ROOSEVELT: ab
COUNTDOWN: ab
Old English: a
GRADE SCHOOL
Invitation: abcdefghijkl
CRATE: ABCDE
EDISON: abcde
SANDWICH: ABC
HOT SAUCE: abc
TIMES ROMAN:
BRANDING IR

30 All-New Fonts for Shape Mechanic and Apple Mechanic

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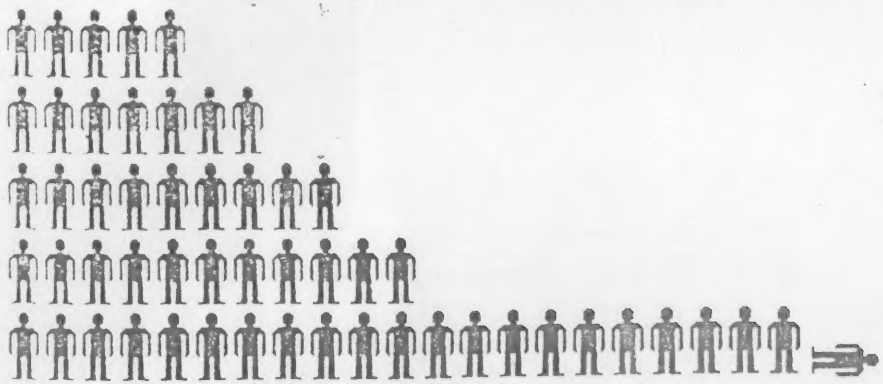

Projected Population

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